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THE VETERINARIAN,

A MONTHLY JOURNAL OF VETERINARY SCIENCE.

JULY, 1889.

EDITED BY PROFESSOR SIMONDS;

ASSISTED BY

PROFESSORS BROWN AND AXE.

CONTENTS.

COMMUNICATIONS AND CASES— Page

Memorandum on an Outbreak of Surra Fever at the Stables of the Bombay Tramway Company, Limited, Nov., 1888 to Jan., 1889 . . . 469

Notes of Cases. By Wm. Aulton, M.R.C.V.S., Derby . . . 480

PHARMACY AND THERAPEUTICS—

Thio-Resorcin 482

PATHOLOGICAL CONTRIBUTIONS—

Pleuro-pneumonia 413

Swine Fever . . . . . ib.

Anthrax . . . . . ib.

Rabies 484

FACTS AND OBSERVATIONS—

The Tapeworm in Servia . . . ib.

Throat Disease in Man and the Lower Animals . . . . . ib.

LEADER—

Rabies and Hydrophobia . . . 485

EXTRACTS FROM BRITISH AND FOREIGN JOURNALS—

Report of the Rabbit Commission . 486

The Bacteriology of Tetanus . . 488

ROYAL AGRICULTURAL SOCIETY OF ENGLAND—

Monthly Council, held June 5th . 489

Veterinary Committee . . . ib.

Hereditary Diseases in Horses . . 490

Page

ROYAL COLLEGE OF VETERINARY SURGEONS—

Special Meeting of Council, held June 4th 490

CENTRAL VETERINARY MEDICAL SOCIETY—

Meeting held June 6th . . . 495

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION—

Quarterly Meeting held May 31st . 496

Discussion on Recent Cases of Pleuro-pneumonia which occurred at High Heaton . . . . . ib.

YORKSHIRE VETERINARY MEDICAL SOCIETY—

"Horse-shoeing and Machine-made Shoes," a paper read by Mr. Mason 500

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION—

Quarterly Meeting, held May 24th . 508

President's Inaugural Address . . 510

ROYAL SCOTTISH VETERINARY ASSOCIATION—

Quarterly Meeting, May 1st . . 514

"Purpura Hæmorrhagica," introduced by Professor Walley . . . 515

[*Continued on* p. 2.

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CONTENTS— *continued.*

	Page
LANCASHIRE VETERINARY MEDICAL ASSOCIATION— Discussion on Mr. J. B. Wolstenholme's paper on "Puerperal Apoplexy in the Cow: Is it Analogous to Puerperal Fever in the Human Female?"	518
NEW MEMBERS OF THE PROFESSION	532
GLASGOW VETERINARY COLLEGE— Examinations and Distribution of Prizes	537
NEW VETERINARY COLLEGE, EDIN.— Examinations and Distribution of Prizes	539

NOTICE.

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THE SEVENTH GENERAL MEETING will be held on July 24th and 25th, 1889, at the Society of Arts' Rooms, John Street, Adelphi, London. The following subjects will be brought forward for discussion:

1. "Cow-Pox," by Professor E. Crookshank.
2. "Diseases of the Urinary and Generative Organs," by Mr. A. E. Macgillivray.
3. "Some Contagious Skin Diseases of the Horse," by Professor W. A. Edgar.
4. "Mechanical Aids to Diagnosis," by Mr. W. Hunting.

Members of the Profession (not Members of the Association) are invited to attend the meeting as visitors and join in the discussion. If they will forward their names and addresses to the GENERAL SECRETARY a card of admission will be remitted to them.

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ROYAL VETERINARY COLLEGE.

WINTER SESSION, 1889–90.

THE MATRICULATION EXAMINATION will be held at the Royal Veterinary College, Camden Town, N.W., on Wednesday and Thursday, September 25th and 26th, at 10 a.m. Candidates must attend at the College on Tuesday, the 24th, for the purpose of paying the Fees.

The Entrance Fee of Forty-five Guineas may be paid in three instalments—viz. Twenty-five Guineas on entry, Ten Guineas at the end of the first period of study, and Ten Guineas at the end of the second period of study. The first instalment must, with the Matriculation Examination Fee of One Guinea, as well as the "Library and Reading Room" Fee of One Guinea, be paid prior to the Examination.

The Subjects of Examination will be Reading, Dictation, English Grammar, English History, Geography, Arithmetic, and either *French*, *German*, or *Latin*. Candidates are particularly requested to give *at least a week's notice* of their intention of presenting themselves at the Examination, and whether they elect to be examined in *French*, *German*, or *Latin*; likewise, which of the Voluntary Subjects, *if any*, they propose taking up.

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Class Prizes are given in each division of the Student's Studies.

RICHARD A. N. POWYS, Secretary.

BOOKS, ETC., RECEIVED.

It is particularly requested that in future the Foreign Exchange Journals be directed to the Editor of the *Veterinarian*, 22½, Bartholomew Close, London, E.C.

Hog Cholera: its History, Nature, and Treatment, as determined by the Inquiries and Investigations of the Bureau of Animal Industry (U. S. Department of Agriculture).

Supplement to the Quarterly Journal of Veterinary Science in India, 1887–88.

Report as to the Best System for the Maintenance of Main Roads in the County of Hertford, by Urban A. Smith.

The following foreign publications are to hand:—*Annales de Medecine Vétérinaire*, June, 1889; *Oesterreichische Monatsschrift für Thierheilkunde, und Revue für Thierheilkunde und Thierzucht*, June, 1889; *Archivio per le Scienze Mediche, La Clinica Veterinaria* (Milan), May, 1889; *Recueil de Médecine Vétérinaire*, May, 1888; *Giornale Veterinaria Militare*, No. 7; *American Veterinary Review*, September; and *Journal of the National Agricultural Society of Victoria*, Vol. IV, No. 44.

Papers received: *Mark Lane Express*, *North British Agriculturist*, *Land and Water*, *The Field*, *Live Stock Journal*, *Bell's Weekly Messenger*, *Agricultural Gazette*, *Farmers' Gazette*, Dublin; *Isle of Wight Times*, *Isle of Wight Observer and Chronicle*, *The Isle of Wight County Press*, *The Andover Observer*, *The Gazette*, Montreal; *The Evening Dispatch*, Edinburgh; *The Bournemouth Visitors' Directory*, *Macclesfield County Herald*, and *The Farm, Field, and Fireside*.

NOTICE TO CORRESPONDENTS.

To ensure the publication of Cases and Communications in the coming Number they should arrive by the 15th of the Month.

Letters, Reports of Cases, etc., may be directed to Professor Simonds or the "Editors," at the Royal Veterinary College, or to the care of Adlard & Son, printers, 22½, Bartholomew Close, Smithfield, London. All Morbid Specimens should be sent to the College, and directed to Professor Axe.

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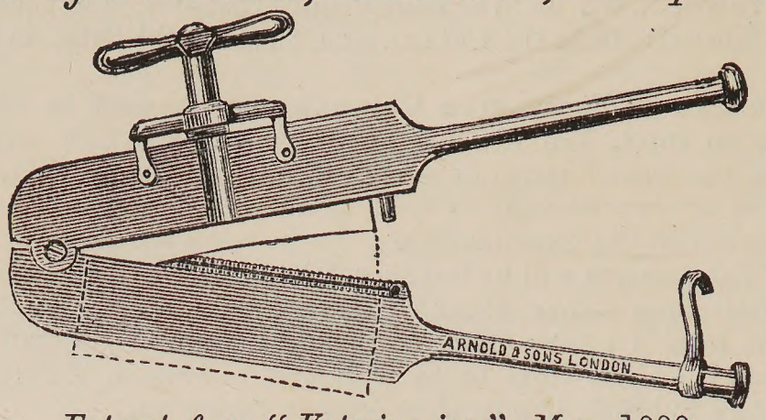

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THE

VETERINARIAN.

VOL. LXII. No. 739. JULY, 1889. Fourth Series, No. 415.

Communications and Cases.

MEMORANDUM ON AN OUTBREAK OF SURRA FEVER AT THE STABLES OF THE BOMBAY TRAMWAY COMPANY, LIMITED, NOVEMBER, 1888, TO JANUARY, 1889.

JUBBULPORE; *Feb.* 18*th*, 1889.

DEAR SIRS,—I enclose you the accompanying report on "surra" and the letter I have received from the Director of the Bombay Tramway Company. If you think the report of any interest for your readers you are at liberty to publish it for future information in the *Veterinarian*.

Yours sincerely,
R. W. BURKE.

BOMBAY TRAMWAY COMPANY, LIMITED,
BOMBAY; *Feb.* 16*th*, 1889.

R. W. BURKE, Esq., A.V.D., Jabalpur.

DEAR SIR,—Referring to my letter of the 23rd ult., I have now the pleasure to forward you two copies of the memorandum on the recent outbreak of "surra" in our stables. With regard to your suggestion that these notes should be published "in a London veterinary journal" with a view to eliciting further discussion on the subject, you are quite at liberty to make any use of the memorandum you like, and to forward it for publication.

Only thirty copies have been printed for private circulation here amongst those interested in the Company.

We duly received your letter of 25th ult., for which many

thanks. We hope you will bear us in mind if your future researches into the causes and treatment of "surra" lead you to any practical conclusions likely to be of value to us.

Again thanking you for your past communications,

Yours faithfully,
The Bombay Tramway Company, Limited,
F. C. RIMINGTON,
Managing Director.

REPORT ON SURRA.

Attached hereto is a statement giving particulars of fourteen horses belonging to the stud of the Bombay Tramway Company which were attacked with surra fever in the months of November and December, 1888. In addition to the record of the outbreak supplied in that statement by our veterinary surgeon we think it well to add a few remarks:

Locality and Description of the Stables.—It will be observed that of the fourteen cases of surra, ten cases have come from the Company's Parel stables. That stable was constructed in 1886, with accommodation for 174 horses, and the actual average number of horses kept there during the two months, when the outbreak prevailed, was 174. The stables are situated on the Parel Road, in the northern and most inland part of Bombay. They are bounded on the north by an enclosure about 5000 square yards in area which is used as a vegetable market and skirted on three sides by lines of brickbuilt chawls; on the south by an open space reserved for purposes of a proposed new station by the G. I. P. Railway Company; on the east by the Parel Road, on the other side of which are the Victoria Gardens; and on the west by the G .I. P. Railway track, beyond which again for some distance there is open land. About 2000 feet from the stables the Flats commence:—open, low-lying, vacant land which extends for several miles, and the greater portion of which is under water during the monsoon. For the two and a half years the stable has been in use there has, up to last November, hardly been a single case of fever there. The stables are splendidly ventilated. The drainage is on the surface system, and could not, we believe, be better. The stalls and all the stable fittings are kept most scrupulously clean. Bad smells are unknown. The temperature at Parel generally ranges two degrees lower than at Colaba, especially at night. The Colaba stables are situated in the Colaba Causeway. To the north is a large piece of *maidan* belonging

to the Government, sometimes submerged during the monsoon for a few days at a time; to the south are goods stations and yards belonging to the two railway companies; to the east the Colaba Causeway Road, with the sea about 600 feet beyond; to the west, open *maidan* with the sea distant about 1000 feet. The average number of horses stabled at Colaba during November and December was 574. The drainage of the stable is inferior to that at Parel, being on an underground system. Great care is, however, taken in flushing the drains and keeping the premises scrupulously clean. The ventilation of the stables is good. Fever has often been prevalent in these stables in October and November, but the number of fatal cases has been few, and the disease has usually disappeared as soon as the "cold weather" set in.

To sum up: the number of horses kept at Parel is less than one third of that kept at Colaba; the interior sanitary arrangements at the former are superior to those at the latter; the record of fever cases at the former has up to November last compared most favorably with that at the latter; the temperature at the former averages two degrees lower than at the latter. Notwithstanding all these facts to the credit of Parel, ten horses have been attacked there during the recent outbreak of surra, against four horses attacked at Colaba stables.

Feed and Water Supply.—(*a*) FEED. The Company's horses get from 12 lbs. to 15 lbs. grain per day according to size. The majority of the horses attacked with surra fever were horses receiving 15 lbs. grain feed. The feed in question was composed of a mixture of eight parts; viz. three parts gram, three parts barley, one part koolti (boiled), and one part Indian corn. Their hay feed was 12 lbs. per diem. The hay is grown on black soil in Guzerat. Like all Indian hay it is jungle hay, not raised on drained land. The grasses we prefer and chiefly employ for hay are Mosi, Daroia, and Zinjva (known in the Deccan as "Sheera"). From August to middle of October, in accordance with our custom for many years past, the horses received from 2 lbs. to 4 lbs. green grass daily, grown in the neighbourhood of Bombay. They also receive daily 1 lb. bran and $1\frac{1}{2}$ oz. salt.

(*b*) WATER.—The water used in the stables and everywhere on our lines is from the Municipal Reservoirs at Vehar and Tulsi; Colaba stable is supplied with Tulsi water, and Parel stable with Vehar water. We had the water used at the latter stable and at the watering stations on the line near there analysed by the Government analyst, Dr. Lyon. The following is his report upon it:

"*Statement showing the results obtained on examination of four samples of water forwarded December 18th, 1888, by the Superintendent, Parel Stables, Bombay Tramway Co.*

"Samples labelled—

No. 1. Parel Terminus.
No. 2. Parel Stable.
No. 3. Byculla Bridge, N. side.
No. 4. Byculla Bridge, S. side.

Grains per gallon.	No. 1.	No. 2.	No. 3.	No. 4.
Total solids . . .	7·70	8·40	6·30	4·20
Chlorine	·91	·91	·84	·84
Parts per million.				
Free ammonia . . .	·04	·02	·02	·02
Albuminoid ammonia .	·19	·18	·21	·17

"*Sediments.*—In all scanty, chiefly vegetable débris. A few paramonia in No. 1.

"From these results all four appear to be samples of water very similar in quality to the ordinary Vehar supply of Bombay. The albuminoid ammonia results are perhaps very slightly higher, indicating slightly more organic contamination. Were the case one of an outbreak of fever among human beings, I should say that it was very improbable that any connection existed between the outbreak and the water supply."

Climatic Conditions last Year.—The monsoon last year was an unusually light one, the aggregate rainfall being fifty-nine inches against an average of seventy-five inches. In September scarcely any rain fell; the total fall registered that month amounted to three and a half inches only. There was no rain in October, and the temperature, which throughout the month was unusually high, touched a maximum of 93° in the shade. Early in October portions of the city were visited with a mosquito plague. The innumerable quantity of those insects in the air indicated something unusual in the climatic conditions, or in the condition of the marshes which skirt Bombay. The weather commenced to get cooler in November, and in the middle of December cold north-east and north-west winds set in and have since continued, the former blowing during the night and the latter during the day.

Breed of the Horses attacked.—The Company had last October a stud of 739 horses. Of these 570 were Australians,

and 169 horses of Asiatic breeds. Of the fourteen horses attacked with surra in November and December, thirteen were Australians, and one was a Persian. The majority were *young horses*, well-bred, and in excellent condition.

The Symptoms and Course of the Disease.—As a rule the presence of the disease was first detected by the horse going off feed, and looking dejected and weak. An eruption of urticaria was found on the skin in a few cases. On examining the animal, the pulse was found high, generally 50 to 60, the temperature 102° to 104°, and the lungs usually, and heart sometimes, affected. If a gelding there was often some slight swelling of the sheath. The membrane was invariably a pale yellowish grey colour, and the anus in some cases extremely relaxed. In a few cases, but not in all, a few blood-spots were observable on the membrane of the eye. As a rule when treated with fever medicines and antiseptics, the horse quickly improved, the temperature falling to 100° or to 101°, and the appetite returning. The swelling of the sheath did not, however, in any case entirely subside, and the pulse continued high. The horse would remain in this improved condition for a few days, eating well and looking well. A relapse would then set in, the temperature again rising to 103° to 104° or occasionally higher; dropsical swellings would appear along the abdomen, and especially between the forelegs. The horse, although feeding well, would now commence to lose condition. In many cases renewed trouble would be observed at the lungs and heart. The majority of the horses attacked exhibited these alternate improvements and relapses, *the animals wasting gradually away, until utterly worn out.* In two cases, however, death ensued four days after the disease had declared itself. In these cases the affection of the lungs was extremely severe, the horse would hardly feed at all, and the whole appearance of the animal was very distressed. One horse attacked with the disease, a rather coarse-bred waler, in very fine condition, lost flesh but slightly before death. The specific surra microbe was found in the blood of this animal by Mr. Pottinger, A.V.D. The same gentleman examined microscopically the blood of some of the other cases, and was generally successful in finding the microbe, but not invariably so. The results of the *post-mortem* examination are given in the veterinary record of the cases hereto attached. In all these *post-mortems* the black colour of the blood was a very noticeable feature.

The Treatment adopted.—The system of treatment adopted

in the majority of cases was that recommended by Mr. Pottinger, and consisted of ʒij hyposulphite of soda, and ʒj nitrate of potash given in the drinking-water; 30 drops of carbolic acid in ʒj rectified spirits given three times daily as a draught. We also tried arsenic, aconite, and sulphate of quinine in large doses. We cannot claim for any of these medicines that they seemed to exercise any control over the disease. Certainly they did not arrest its course. *Every horse attacked with surra has either died or had to be destroyed.* As a precautionary measure we isolated the horses suffering from it.

Preventive Measures adopted. — As soon as we were satisfied that surra had appeared amongst our horses, and that the causes producing it seemed in especial force at our Parel stables, we carried out a most careful and thorough examination of the watering and drainage arrangements at that stable. The results of the examination of the water have been given above. The stable drainage was found in good order, no stoppage anywhere; all drains clean and free from smell. A drain in the neighbouring property to the north was, we found, not working well, and we had it attended to. We disinfected the stables throughout on more than one occasion with phenyle and water, one part to fifty, sending showers of it through the air in every direction from a manual fire engine, and thoroughly drenching the roof and stable fittings. Carbolic powder was also sprinkled in all the stalls, and sulphur and tar burnt in braziers in the passage ways. We noticed that the majority of the horses attacked had been standing in portions of the stable most exposed to the north-west and north-east winds, and that it was since those winds had turned cold in the evening and at night that the outbreak of surra had occurred. With a view to obtaining thorough ventilation in the hot weather our stables at Parel are very open in their construction, and although the venetians, with which the sides are fitted, are closed at night, it occurred to us that at certain places the horses were more exposed than they should be to the night winds. To provide against this, we effectually protected the horses from all apertures whence these winds could enter and blow upon them, and considerably increased the warmth of the stables at night by the erection of bamboo and matting screens across the principal entrances. We also gave all the horses standing at Parel a light course of antiseptic medicine. For three days each horse had daily ʒij hyposulphite of soda and ʒj nitrate potash mixed with his evening grain feed. These

preventive measures were carried out the latter part of December. It was during the last week of that month that we set up the screens, &c., which effectually protected the horses at Parel from cold winds. Simultaneously we introduced stringent regulations at Colaba for the complete protection of the horses there, and maintenance of a more even temperature in the stables at night. Since the 1st of January we have so far had no fresh case of surra.

Possible Causes of the Outbreak.—The professional opinion as to the source of surra expressed by the Government veterinary officers, Mr. Burke, Mr. Evans, and Mr. Steel, in their treatises on this disease, is that the parasites which give rise to it enter the horse's system either with his food or his water. In the Company's stables the water supply, pronounced a pure and wholesome one by the Government analyst, is the same as has been in use for several years past, and no alteration has been introduced into the character of the grain and hay feed. The drainage of the Parel stable, where two thirds of the surra cases occurred, is exceptionally good, much better than the drainage at Colaba stable. Immediately to the rear of the stables at Parel there is a depôt for manure. The dung, both from Colaba and Parel, is transported there. Thence it is daily removed by carts. A portion of it remains there throughout the night, but none of it remains there longer than the morning subsequent to the day of its receipt. At our old stables at Byculla a similar depôt existed, but the manure remained there for three days before removal. At neither stable has the existence of this depôt heretofore been a cause of unhealthiness. The fever record of the Parel stables for the two years of their existence prior to last autumn has been an extremely satisfactory one, very much more favorable than the record at Colaba. We cannot therefore find anything in the feeding of the horses, their watering, or the drainage of their stables, which would account for the outbreak. All these conditions, in so far as they affect the horses' health, have been, to the best of our belief, precisely the same these last four months as during the many past years when surra was unknown to us. We therefore seem directed to seek in some special climatic and atmospheric conditions for the explanation of the outbreak. October and November last were notoriously exceptionally unhealthy months in Bombay. Malarial and typhoid fevers were prevalent, and many cases ended fatally. Unusually unhealthy months for human beings, they would appear to have been unusually unhealthy for horses also.

The outbreak of surra fever was not confined to the Company's stables. Several horses attacked with it were sent to the Government veterinary hospital, and others to the private veterinary establishments in the city. Probably a far larger number died in their owners' stables. Amongst the cases observed we have not heard of a single recovery. Taking all the above facts into consideration, the opinion we have been led to form is that there was some specially unhealthy influence in the atmospheric conditions this last autumn which predisposed horses to this particular blood-poisoning fever, and that the specific cause which developed the disease into activity in the horses attacked with it was getting chilled from exposure to the cold northerly winds which during the latter half of November and the month of December blew in the evening and at night. This is the conclusion to which we have been led as the result of our own experience of the disease. In support of this opinion we have the following facts :—(1) That the horses attacked were found to have been especially exposed to cold night winds by their position in the stables or nature of their work. At Parel stables, where the majority of cases occurred, alterations in the buildings were in progress. The south wall of the stable had been taken down in order to increase the number of stalls in that direction. This open condition of the premises on that side, while it did not expose the horses to any unwholesome wind (the south wind only blowing in the monsoon time, and being a warm one) tended no doubt to increase the draught through the stables from the north, and to lower their temperature at night. (2) That since the time when we introduced measures for protecting the stables from the northerly winds (a period of five weeks) no fresh case of surra has occurred. The last case at Parel stables appeared on the 29th December. It was on the 30th of that month that we completed the arrangements for excluding cold winds. (3) That the Parel stables, where nearly three fourths of the cases occurred, were until recently, in consequence of their system of construction, more open and considerably colder than the stables at Colaba. (4) That there is nothing ascertainable in the feeding or watering of the horses differing from the feeding or watering during previous years when surra was unknown to us, or which can in our opinion in any way account for the outbreak.

In connection with the exposure of the horses to cold winds and our opinion that the chill to the system therefrom resulting was the immediate factor producing activity in the

disease, we may mention that out of eight horses working as "helping" horses on the Byculla Bridge no less than three were attacked with surra, and of these two were attacked upon the same day. Compared with the work most of our horses do, the work of these particular horses was light, and they were in specially good condition and of exceptionally fine physique. These horses are attached as additional horses to help in pulling cars up the inclines on the bridge. After pulling up a car they return to the little waiting-sheds provided for them at either end of the bridge and stand, usually about five minutes, until another car approaches. On examining these sheds we found them a good deal exposed to the north wind. We have now protected them; but it is easy to understand how in the early morning, or between 7 p.m. and 11 p.m. at night, these horses after getting warm at their work would be specially liable to chill when standing waiting in sheds until recently not very well protected from cold winds.

In the plains of America it has been noticed that in certain thinly populated districts where fever was prevalent the introduction of railway tracks and the passage of trains has modified the sanitary conditions. The theory in explanation of this fact is that the displacement of air caused by the rapid passage of the train creates a vacuum and consequent draught, and that a rush of fresh air is in this way introduced. In other words, the train produces a sort of artificial wind. The track of the G. I. P. Railway passes immediately behind our Parel premises, distant only seventy-five feet from the stables. About 2000 feet further to the north the Flats commence, and are crossed by the trains. In this memorandum we are anxious to enumerate all possible influences which may have shared in the production of the recent outbreak of surra. It is perhaps worthy of consideration whether the G. I. P. Railway track, which very shortly after leaving the marshy land of the Flats passes our Parel stables on their north-west side, does not act as an air-channel from the one to the other. The line of horses standing next to the railway was the line in which the surra was by far the most prevalent.

A conjecture has been put forward by some veterinary authorities in India that there is a connection between surra and rats. A parasite has been found in the intestines of rats which is similar to the parasite noticed in the blood of horses suffering from surra. It is suggested that where rats have access to grain it becomes contaminated with their excreta, and that when used for horses' feed the

Veterinary Record

Horse No.	Date of Purchase.	Age.	Breed.	Sex.	Single or Double Car Service.	What Line.	Mileage Average.	Which Stable.	On what Feed			
									Grain.	Bran.	Salt.	Hay.
									lb.	lb.	oz.	lb.
	1879.											
366	May 1	16	Australian	Gelding	Single	Yellow	14·31	Parel	15	1	1½	12
	1883.											
472	Jan. 28	11	„	Mare	„	M. S. & C. B.	12·27	Colaba	15	1	1½	12
	1886.											
496	Nov. 23	8	„	Gelding	„	G. Road	11·18	„	15	1	1½	12
	1883.											
182	Feb. 21	11	„	„	„	„	11·18	„	15	1	1½	12
	1886.											
604	Jan. 1	8	„	„	„	Yellow	14·31	Parel	15	1	1½	12
	1884.											
511	Jan. 14	11	„	Mare	„	„	14·31	„	15	1	1½	12
	1884.											
356	Oct. 30	11	Persian	Gelding	Double	Green	14·48	„	13	1	1½	10
	1883.											
230	Jan. 28	11	Australian	„	Single	Byc. Bridge	11	„	15	1	1½	12
	1884.											
93	Jan. 14	11	„	„	„	„	11	„	15	1	1½	12
	1886.											
403	Nov. 22	9	„	Mare	„	Yellow	14·31	„	14	1	1½	12
	1888.											
196	Feb. 13	6	„	„	„	„	13·27	Colaba	15	1	1½	12
	1879.											
373	May 15	16	„	Gelding	„	Byc. Bridge	11	Parel	14	1	1½	12
	1883.											
480	Jan. 28	12	„	Mare	„	Yellow	14·31	„	15	1	1½	12
	1884.											
323	Dec. 29	8	„	Gelding	„	„	14·31	„	14	1	1½	12

regarding Surra Cases.

Date when Attacked with Surra.	Treatment Pursued.	Died or Destroyed.	Results of *Post-mortem.*
1888.			
Oct. 18	Fever draughts and Sulph. Magnesia and fever balls.	Died 3–11–88	Lungs found diseased.
„ 21	Fever draughts, fever balls. Also 1 oz. Hyposulph. Soda, ½ oz. Pot. Nit., water, 30 drops Carb. Acid (3 times daily in 1 oz. Spts. of Wine), Sulph. Quinine.	Died 4–12–88	Lungs found diseased; blood impure.
„ 31	Fever balls, fever draughts, and alt. balls. Sulph. Quinine.	Died 26–11–88	Lungs and heart found diseased; blood impure.
Nov. 6	Fever draughts, fever balls. Also 1 oz. Hyposulph. Soda, ½ oz. Pot. Nit., water, 30 drops Carb. Acid. (3 times daily in 1 oz. Spts. of Wine), Sulph. Quinine.	Died 2–12–88	Lungs found diseased; blood impure.
„ 12	Fever balls (½ dram.). Digitalis, fever draughts.	Died 25–11–88	Lungs found diseased.
„ 18	Fever draughts and Aconite.	Died 21–11–88	Lungs, heart, and kidneys found diseased.
„ 19	Fever balls and draughts, alt. and ton. balls. Hyposulph. Soda, Pot. Nit., and Carb. Acid (as above).	Died 10–1–89	Lungs found very much diseased; kidneys slight, all other organs all right; all membranes pale.
Dec. 11	Fever draughts.	Died 15–12–88	Lungs found diseased.
„ 16	Fever balls and draughts, alt. and ton. balls, Hyposulph. Soda, Pot. Nit., Carb. Acid, and 3 grs. Arsenic (twice daily).	Died 14–1–89	Lungs very much diseased; blood very impure.
„ 16	Fever balls, 1 oz. Hyposulph. Soda and ½ oz. Pot. Nit., 30 drops Carb. Acid (3 times daily).	Died –12–88	Heart, lungs, and liver found diseased; blood impure.
„ 17	Fever and stimulating draughts, fever and ton. balls.	Destroyed 16–1–89	Lungs shrunk and tubercled; stomach and large intestines very much inflamed; liver enlarged and sodden; heart very much diseased; blood impure.
„ 17	Fever balls, 1 oz. Hyposulph. Soda and ½ oz. Pot. Nit., 30 drops Carb. Acid (3 times daily).	Destroyed 22–12–88	Lungs, liver, and heart found diseased; blood impure.
„ 23	Fever balls and 3 grs. Arsenic (twice daily).	Died 13–1–89	Lungs very much diseased; liver hard and congested; stomach a little inflamed; muscles all wasted, and blood impure.
„ 29	Fever balls and draughts, alt. and ton. balls, Hyposulph. Soda, Pot. Nit., Carb. Acid, and 3 grs. Arsenic (twice daily).	Destroyed 16–1–89	Blood dirty and dark; stomach a little inflamed and large; intestines very much; lungs slightly diseased.

J. T. ROGERS, V.S.,

In Veterinary Charge.

parasite may in that way be conveyed into the horses' stomachs. In view of this theory we think it right to mention that although the greater portion of our grain is kept in paved godowns and we do our best to exclude rats, yet we know that *both before and after the grain is received by us rats do frequently get at it.* But before our grain is used for horses' feed it is carefully cleaned both by hand and through a machine. We ourselves cannot from our own observation favour the rat-infection theory. If the source of the disease is due to grain getting mixed with the excreta of rats, why is the appearance of the fever limited to certain seasons,* and why should it appear only in certain years? For the past fourteen years it has been unknown in our stables, and during those years our stocks of grain and hay have been less well protected from the incursions of rats than they have been the past twelve months.

We have now we think exhausted all we are in a position to state with regard to our own experience of surra fever. We submit these few remarks on a veterinary subject as proceeding, of course, from a non-professional pen, and while we trust to be pardoned any mistakes into which we may in consequence have fallen, we hope that our experience may be of value to those who are making this disease a subject of special study. As a large owner of horses this Company is deeply interested in researches which have for their object the discovery of a remedy for this most fatal form of equine fever.

For the Bombay Tramway Company, Limited,
F. C. Rimington,
Managing Director.

Bombay, *7th February*, 1889.

NOTES OF CASES.

Mr. W. Aulton, veterinary surgeon, of Derby, sends us the following notes of cases occurring in his practice.

A remarkable coincidence I have had this last month, viz. seven very difficult cases of parturition in mares following the same sire, each fœtus offering the same presentation, namely, foal lying on its back, head back lying on hip, both forefeet propping upwards against the lumbar vertebra. I experienced the same last year in several cases by same sire, and also heard of other cases.

* The appearance of parasites in general is limited to certain seasons. The surra parasite itself is limited to certain seasons.

I was called to a very interesting case a few days ago of valvular disease of the heart in a yearling bull producing atheroma of the carotids. I should have sent this case for your inspection, but did not think it worth while as it is the vacation. I enclose specimens of scabs taken from a cow's udder for your inspection. She is an aged beast in good condition. She sickened and showed febrile symptoms, and about the third day an eruption appeared on the udder extending on to perineum, eventually coming on vulva. Fever still continues. The lungs are slightly affected. She has made slight improvement. The vesicles are drying up, and the patient is feeding better.

I have had much interesting matter this spring which I should have much liked to have apprised you of, but time would not permit my doing so.

I have to-night forwarded a portion of a cow's lungs affected with contagious pleuro-pneumonia. In my opinion I think it a very clear case, and I am sorry to say there have been three cases previously to this during the past month which have proved fatal in the same dairy. I was convinced it was contagious pleuro, and on inquiries I made I elicited that numerous purchases of cattle had been made from various markets and fairs which would be quite compatible with an outbreak of this description, animals being so introduced into a herd suffering from incubative pleuro-pneumonia. Upon inspection of the animal under investigation, and suspecting her of pleuro, I at once had her slaughtered. *Post-mortem* examination proved she was undoubtedly the subject of contagious pleuro-pneumonia. I had the carcass buried and applied the usual disinfectants, and had all the animals which had been in contact with the one affected isolated to wait further results.

I was called in to examine a dairy of cattle, about fifty in number. The owner of the same has lost fifteen in about two years. They show no symptoms of pain, but waste and go very pale upon their skins, all visible mucous membranes the same, and they appear to become bloodless, and ultimately die, as a rule in a kind of fit. *Post-mortem* appearance.—All organs are healthy, no inflammatory symptoms or structural disease to be seen. It appears to me to be ascites, which I attribute to the greater part of the farm being recently laid down for permanent pasture, and upon inquiries I find the farmer mows this land for his hay for winter fodder, and they appear to be mostly affected when feeding upon dry food. The water they drink is from a spring, which runs into troughs, and is very good, coming out of the

gypsum rock; there is also a running stream through the farm, which they have free access to in the summer months when some of the cases have occurred. I ordered a lump of lime to be thrown in the troughs once a week after being well cleaned out, and a good supply of salt mixed with their food, and a supply of ground barley, beans, Indian corn, or oats and bran, to be mixed with chaff and brewers' grains, as in examining the provender I found the hay was of a very poor quality, it containing very little nutriment and so much woody fibre. Again, the manure used was the farmyard manure made from this poor quality hay and brewers' grains only, no chemicals, cake, or corn being consumed on the farm. I ordered the land to be dressed with salt and all the open drains to be cleaned out, and the soil to be mixed with lime and put upon the land, which I hope will help to add to the health of the cattle.

I have had numerous cases of cerebro-spinal meningitis during the last few weeks, principally amongst two-year-olds, but several in dairy cows upon different farms; several cases have proved fatal. I have had the healthy cattle removed and given bold doses of oil and turpentine. They have gone on well since; these cases we have treated according to the symptoms present: applied blister to back of head and spine, and they have gone on fairly well, leaving some cases partly blind.

Pharmacy and Therapeutics.

THIO-RESORCIN.

THE latest substitute for iodoform is a combination of sulphur with resorcin, discovered by Ewer and Pick of Berlin, to which the name of thio-resorcin has been applied. It occurs as a powder, and is without smell and entirely non-poisonous. It has been used as a dusting powder, and as an ointment made up with vaseline of the strength of from 10 to 20 per cent., for eczema, psoriasis, itch, and other skin diseases. It is insoluble in water, but sparingly soluble in ether and alcohol. In price it is about the same as iodoform. —*Lancet.*

Pathological Contributions.

PLEURO-PNEUMONIA.

In Great Britain during the four weeks ending June 15th, 42 fresh outbreaks of this disease have been reported, 22 in England and 20 in Scotland. In addition to the English counties in which the disease has a permanent existence, it has extended to Chester, Leicester, and Northampton, districts in which it has not been known for some time. The districts in Scotland where it has been most prevalent are Edinburgh, Fife, Forfar, Lanark, and recently an outbreak has occurred in Kincardineshire.

The number of cattle attacked in the four weeks was 106, of which 61 were in England and 45 in Scotland. The number of healthy cattle slaughtered because they had been exposed to the risk of infection was 349 ; of these 173 were in England and 176 in Scotland. In Ireland the disease still continues. Nine outbreaks were reported in the three weeks ending June 8th, 15 cattle were attacked, and 65 healthy cattle in contact were slaughtered.

SWINE FEVER.

During the four weeks above referred to 540 fresh outbreaks of this disease were reported in Great Britain, and 2510 pigs were attacked. Of these diseased swine freshly infected, and the diseased swine left alive from previous weeks, 1293 were killed, 921 died, 217 recovered, and 424 remained alive when the return was made up. This malady is still confined chiefly to England, only a few cases being reported in either Wales or Scotland.

ANTHRAX.

Of this malady 12 fresh outbreaks have occurred during the four weeks. Eleven of these were in England in the counties of Cornwall, Derby, Lancaster, Leicester, Northampton, Somerset, Stafford and York (West Riding) ; the other outbreak was reported in Edinburgh. The number of animals attacked was 12, and of these 8 deaths and 1 recovery were returned.

RABIES.

In England 27 cases of rabies were reported in the month in the counties of Essex, Kent, Lancaster, London, Middlesex, Lincoln (Lindsey), Surrey, Sussex (East), and York (West Riding). The animals affected were 25 dogs, 1 head of cattle and 1 sheep.

In Ireland 42 cases of rabies were reported in the three weeks ending June 8th. Of these 23 were dogs, 14 cattle, 3 pigs, 1 sheep, and 1 donkey. They occurred in the counties of Armagh, Cavan, Cork, Down, Dublin, Fermanagh, Galway, Kerry, Kildare, King's County, Limerick, Longford, Mayo, Meath, Monaghan, and Westmeath.

Facts and Observations.

The Tapeworm in Servia.—The tapeworm had become a general form of malady in Servia ; but much was done last year to get rid of this by careful sanitary precautions being taken by the veterinary staff in examining the swine and pork imported from other countries.—*Lancet.*

Throat Disease in Man and the Lower Animals.—Another suggestion as to the existence of a connection between diphtheria and allied throat disease in the human subject and some similar disease in a lower animal comes from Darton, near Barnsley, where Dr. Bruce Low, of the Local Government Board, is making inquiry as to the deaths of twenty children from diphtheria and so-called "croup." The clerk to the Local Board of Health has reported that in a number of cases there seem grounds for believing that the disease had been communicated to children by means of cats which were ailing, one of them fatally so. Whatever the actual facts in this case may turn out to be, it is quite certain that we already know enough to call for much greater caution than has heretofore been observed in our dealings with animals such as cats, and also with certain birds, when these appear to be suffering from throat affections.—*Lancet.*

THE VETERINARIAN, JULY 2, 1889.

Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

RABIES AND HYDROPHOBIA.

MORE attention has been directed to the question of the prevention of rabies recently than at any former period, excepting periods of excessive prevalence of the disease. It cannot be said that rabies is prevalent now, in fact the cases reported are comparatively few in number, and only a few instances of death from hydrophobia have been recorded. But the significant fact is evident that people who are not victims to infatuation of the most pronounced kind where dogs are concerned are beginning to realise that one death from the bite of a rabid dog is an event full of horror, and the friends or family of the victim find it no consolation in their life-long sorrow to learn that the death-rate from that most terrible and hopeless of all maladies is remarkably low. The disease need not exist at all, and that knowledge adds to the infinite regret with which a single case of hydrophobia in man must always be contemplated; a human being dies under conditions which inflict terror and nameless dread on the victim and his friends, and all the time it is known that the terror need not have been inflicted if only the dog might be rendered harmless by the application of the muzzle.

A Mansion House Fund is being raised to aid the Pasteur Institute, and it will most probably in the usual course be successful in a financial point of view. But if it is necessary that people must be bitten by rabid dogs, and if the system of inoculation invented by M. Pasteur is really protective, both presumptions being open to discussion, might it not be more convenient to raise a fund to provide the remuneration of experts to inoculate bitten people in different parts of England instead of sending them to Paris? And still more cogent is the argument in favour of dealing with the origin of hydrophobia in the form of the rabid dog which is the prime agent in its production.

An impression exists that the Pasteur Institute is devoted to the purpose of inoculation of persons who have been bitten by rabid dogs, or by dogs suspected of being rabid. The institution is in fact a large physiological and chemical laboratory, in which experiments of all sorts may be conducted, and London and other large towns might well claim

that they could provide similar institutions; indeed they already exist, and might very easily add to their work that of the protective inoculation of persons threatened with hydrophobia. No attempt in this direction has yet been made, and it is quite permissible to inquire into the reasons for the omission. In the process of preparation of the inoculating material no difficulty presents itself; a certain number of rabbits must be systematically and regularly sacrificed for the purpose, and that part of the work is done. The mode of inoculation is simplicity itself, and the immediate effects are no more serious than those which the hypodermic injection of a solution of morphine cause. There is, in short, nothing in the way of the adoption of the operation at any medical school in the country if the medical profession are satisfied of the value of the system. That they are so satisfied does not appear from their attitude, and lookers-on may be disposed to think that the want of faith in the safety and protective efficacy of the operation is the real reason against the establishment of one or of several centres in this country, where it might conveniently be practised.

Meanwhile the question of a general muzzling of dogs all over the kingdom is being discussed, and if owners of dogs could be persuaded to put up with the inconvenience for a few months rabies might be extinguished. Its introduction from abroad might be prevented by placing restrictions on the importation of foreign dogs, just as they are enforced in regard to cattle, sheep, and swine. About the efficacy of preventive measures in getting rid of rabies and hydrophobia no doubt can exist in the presence of the evidence with which other countries have furnished us, and it is certainly a more rational and consistent act to eradicate the disease among dogs on which the affection in man depends, than to devote much time and labour to the perfection of a system of inoculation for the benefit of persons who have been bitten by rabid animals.

Extracts from British and Foreign Journals.

REPORT OF THE RABBIT COMMISSION.

SYDNEY, *April 3rd.*

THE report of the Royal Commission appointed to report on the various schemes submitted by M. Pasteur and others for the destruction of rabbits by disease was laid on the table in

the Legislative Assembly to-day. After speaking in detail of the results of the various experiments, the Commission gives a general conclusion concerning the efficacy of chicken cholera for the destruction of rabbits as follows:

"The Commissioners find that while rabbits are easily killed by the addition of microbes of chicken cholera to their food, the disease does not spread freely from infected to healthy rabbits. The disease in rabbits differs widely in this respect from chicken cholera as seen among fowls. In poultry yards it is virulently effective. Inquiries conducted on behalf of the Commission furnish a satisfactory explanation of this difference. Fowls infected with chicken cholera suffer not only from blood-poisoning, but also from severe diarrhœa, and their droppings spread the disease. On the contrary the infected in rabbits, with a few exceptions, remain free from diarrhœa, and they die of pure blood-poisoning. The microbes are chiefly in their blood, and if these microbes are to infect other rabbits in any number, the bodies of the rabbits which have died from the disease must be broken up by decomposition, or by the agency of carrion birds, &c., and the microbes, so set free, must contaminate the food of other rabbits. If the dead bodies lie in the burrows it will be remembered that rabbits do not feed there. If they lie in the open, and the microbes are set free, a temperature of 124 deg. Fahrenheit, or the mere process of drying at a much lower temperature, will suffice to destroy their virulence. Moreover, the experiments of Dr. Katz indicated that while the microbes retain their virulence for a time when mixed with putrefying matter there is a limit to their power of survival generally. Therefore, it appears that the destruction of rabbits on a large scale by chicken cholera can be obtained only by feeding the rabbits with the microbes of the disease, and as other poisons such as arsenic and phosphorus, to the use of which no objection can be taken, will kill rabbits to which they are administered, the Commissioners cannot recommend that permission be given to disseminate broadcast through Australasia a disease which has not been shown to exist in these colonies and which in other colonies prevails in disastrous epidemics among fowls, but which has never been known to prevail naturally among rabbits."

This is the principal conclusion, but the report deals with a variety of other points. It states that the Commissioners have found no evidence to warrant the belief that any disease can be employed to exterminate rabbits, and recommends the compulsory erection of rabbit-proof fencing, and that the responsibility for the destruction of rabbits should rest on the

landholders, but that the State should show special consideration, as holders of land will be placed in a position of special difficulty. Among other things the Commission found that chicken cholera will not affect domestic animals other than birds, and that wild birds are not so subject to it as fowls and rabbits. They are therefore not prepared to recommend the Government to forbid M. Pasteur's representatives to experiment with chicken cholera in infested country, subject to certain restrictions. From this, however, Professor Allen dissents, as he objects to any such experiments.

THE BACTERIOLOGY OF TETANUS.

"Professor Bizzozero has just submitted to the Royal Medical Academy of Turin the results obtained by Professor Tizzoni of Bologna and Signora Giuseppina Cattani on the *Bacillus tetani*. These investigators took their material from a patient in the surgical wards, the victim of a fracture the seat of which had been contaminated by soil from the ground on which he had fallen. Traumatic tetanus of the most characteristic kind had ensued. Experiments made with the living blood in great quantity, with the median nerve and medulla of the bone taken a little above the point of fracture immediately after amputation of the limb, and also with the brain and spleen after death, yielding negative results, both with the cultures and the experiments themselves. From the material taken from the osseous surfaces of the fracture and from the soft parts immediately contiguous, there were obtained other micro-organisms and the '*Bacillus spilliformis*' of Nicolaier. These latter inoculated in animals produced tetanus, followed by death after twenty-four or forty hours. Left to themselves for three months in blood serum slightly solidified at a low temperature there was again obtained from their inoculation distinct tetanus. Cultures of this liquid yielded a coccus, a short bacillus, and the bacillus of Nicolaier. Such colonies become so intimately fused with others that not seldom the transplantings from them turn out impure. This result probably accounts for the findings of Drs. Belfanti and Pescarolo. In any case Drs. Tizzoni and Cattani are the first, according to Professor Bizzozero, who have obtained a pure culture of the *Bacillus tetani*, and who have kept it such throughout successive transplantings. The sequel of their researches will be awaited with special interest."—*Lancet.*

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

MONTHLY COUNCIL, Wednesday, June 5th, 1889.

HIS GRACE THE DUKE OF RICHMOND AND GORDON, K.G. (Trustee), in the chair.

VETERINARY COMMITTEE.

Sir John Thorold (Chairman) reported that Mr. Cope (for Professor Brown) had presented the following report:

Pleuro-pneumonia.—Between April 20th and May 25th (a period of five weeks) 33 fresh outbreaks of this disease have been reported in Great Britain, and 82 cattle found affected with it. In the corresponding period of last year there were 50 fresh outbreaks and 144 cattle attacked. In Ireland, 15 outbreaks have occurred in the five weeks, and 34 cattle have been attacked, whereas in the corresponding weeks of last year there were 24 outbreaks and 60 cattle affected. The healthy cattle slaughtered because they had been in contact with the disease numbered 767 in Great Britain, and 187 in Ireland.

Anthrax.—During the five weeks above mentioned there have been 24 fresh outbreaks of anthrax in Great Britain, 22 of them in England, and 2 in Scotland; 74 animals were attacked, 2 of which were in Scotland, the rest in England; no less than 42 of these cases were reported in one week in the county of Dorset, the affected animals being pigs.

The other counties from which anthrax returns have been received were Cornwall, Kent, Lancaster, Leicester, Northampton, Notts, Oxford, Somerset, and the Isle of Ely, in England; while in Scotland the disease existed in Forfar and Edinburgh.

Swine Fever.—For the past few weeks this disease has been increasing, but not to any greater extent than usually occurs about this season of the year. In the five weeks ending May 25th there were 585 outbreaks reported, or an average of 117 per week; in the preceding sixteen weeks of this year the average was about 78 per week. The number of pigs attacked was 2811; of these, and about 300 left alive diseased from previous weeks, only 1310 were killed, 1061 died, 146 recovered, and 516 remained alive when the last return was made up.

A letter had been received from the Agricultural Department announcing that the Lords of the Committee of Council for Agriculture had suspended the operation of the Order of March 1st, admitting animals free from Holland, until September 1st next. Thirty-nine entries had been received for the horse-shoeing competition, six of which were for the exhibition of systems not in common use.

A letter had been received from Mr. B. Freer, of Uppingham, accepting the appointment of Provincial Veterinary Surgeon for the county of Rutland.

Hereditary Diseases in Horses.

A letter having been read from the Royal Commission on Horse Breeding asking the Council to nominate two of its members to sit with the Commissioners when evidence was being taken by them on the question of hereditary diseases in stud horses, the Committee recommended that his Grace the Duke of Richmond and Mr. Walter Gilbey be asked to represent the Society in this capacity.

ROYAL COLLEGE OF VETERINARY SURGEONS.

SPECIAL MEETING OF COUNCIL, HELD JUNE 4TH, 1889.

Professor Pritchard, President, in the chair.

Present:—Professors J. W. Axe, W. Duguid; General Sir Frederick Fitzwygram, Dr. Fleming, Sir Henry Simpson; Messrs. J. D. Barford, T. Briggs, E. C. Dray, J. Roalfe Cox, B. Cartledge, T. Greaves, H. Kidd, W. J. Mulvey, H. R. Perrins, J. F. Simpson, Peter Taylor, W. Wilson, W. Woods, F. W. Wragg; Mr. Thatcher, the Solicitor; and Mr. A. W. Hill, Secretary.

The *Secretary* read the notice convening the meeting.

Mr. Peter Taylor moved that the minutes of the previous meeting be taken as read.

Mr. Kidd asked, under Bye-law 8, that the minutes should be read.

Dr. Fleming said that the minutes had been published in the journals, and that for a great number of years it had been the custom of the Council to take the minutes as read.

Mr. J. F. Simpson said that, being perfectly acquainted with the minutes of the previous meeting, he expressed no wish one way or another, but he would ask whether it was not a fact when any member of the Council desired the minutes to be read that they must be read.

General Sir Frederick Fitzwygram said that it was quite insufferable to have the time of the Council wasted in such a manner.

The minutes of the previous meeting were then taken as read and confirmed.

Election of President.

Professor Duguid proposed that Professor Axe be elected President for the ensuing year. Professor Axe was so well known that it was needless to make any comments upon his qualifications for the office; and he was the oldest member of the Council who had not hitherto filled the presidential chair.

Mr. B. Cartledge seconded the motion.

Mr. Greaves said that several members of the Council, including himself, had wished to propose another gentleman as

President, namely, Mr. Peter Taylor, but out of respect to Professor Axe, and with the desire that the vote should be a unanimous one, no other gentleman would be proposed. No one could find the slightest fault with the action that had been taken, but the provincial veterinary surgeons felt somewhat aggrieved that so many metropolitan practitioners and professors should occupy the highest position which could be conferred upon them. He hoped that in future the provincial practitioners should have the honour of electing a President for the Council, if not every other year, at all events more frequently than they now had. Mr. Taylor had been a member of the Council for a great number of years, and he hoped it would be understood that he would be eligible for the office of President next year.

Mr. B. Cartledge said that if Mr. Greaves had any other candidate to propose, the Council were bound to listen to him, but he thought Mr. Greaves was entirely out of order in making such comments.

The *President* thought it might be taken that Professor Axe was unanimously elected.

Mr. B. Cartledge thought the Council were bound to elect the President by ballot.

Sir Henry Simpson ventured to submit that it was not necessary to ballot, as only one candidate had been proposed.

The motion for the election of Professor Axe as President was then put and carried unanimously.

The *President*, in congratulating Professor Axe on his election, greeted him to the chair as President for the coming year.

Professor Axe then took the presidential chair.

The *President* (Professor Axe) said that he appreciated very much the honour that the Council had been pleased to confer upon him. It was natural that one should look forward to occupy the position which so many worthy men had previously occupied. It could not fall to the lot of all, but it might fall to the lot of those who in their aims and objects had striven to obtain a high position in the profession. He recognised in their choice of President for the coming year that the Council saw in him one who had aimed at, if not altogether attained to, a high position in their ranks. It had been suggested that perhaps no important measure was likely to come before the Council during the coming year, but he hoped that prophecy would not be realised. Both in the system of teaching and of examining, and indeed in their scientific position they were only in their infancy, and there was a great deal to be attempted and achieved in the future. It would not do to sit down and be satisfied with things as they were; and he should take it as an ill omen if measures of considerable importance were not brought under their consideration during the year of office on which he was now entering. The profession was becoming more and more alive to the necessity of progress, and it was

beginning to recognise the means and methods of progress. There were some difficulties still in existence with regard to the examination of students. They had been told that there was a want of uniformity in the preliminary educational examination. He did not know how far that might be true, but it was desirable that the Council should at least endeavour to remove every suspicion of irregularity in a matter of such moment. It had also been pointed out that the professional examinations were still incomplete and would continue to be so until a written test was instituted. For himself he believed that a written test would not only be a great advantage to the student, but a great advantage and security to the examiners; as well as a means by which other important objects could be achieved. The examinations, he thought, sooner or later, would have to be considerably broadened in another direction. The time was not far distant when students would be required to be submitted to a clinical examination which, he thought, would not only be an incentive to the student to become more observant and necessarily more intelligent, but it would have the tendency to advance the future of the profession. The time had also arrived, he believed, when the question of sanitary science should form part of their system of teaching and examining. That had been too long disregarded considering the important nature of the question as it affected our herds, flocks, and studs at the present time. Another point of importance was the practical training of students. It had from time to time been suggested that the means possessed by the schools was insufficient to give students the extent and breadth of practical instruction which it was necessary to possess in entering upon the duties of their profession. He agreed with what the representatives of schools had from time to time admitted, namely, that it was incompetent for them to make practical veterinary surgeons. It would be for the Council to map out some scheme by which more practical information could be obtained by the student prior to his submitting himself to the final examination. It had occurred to him that perhaps they might reasonably insist upon students devoting their vacation to practical work with veterinary surgeons in practice before being admitted to the final test. If the eight months at their disposal between the sessions were devoted to that work a great step would be made towards their advancement. Those, he thought, were some of the practical questions which might usefully be brought before the Council. Although he felt that he might not be able to discharge the duties which devolved upon the President as well as he could wish, he looked forward to that united assistance which members of the Council had always readily conceded to his predecessors on every occasion when difficulties arose in the business of the College. He hoped by their help to accomplish the task of maintaining the dignity and honour of the position which had been entrusted to him.

Election of Six Vice-Presidents.

The names proposed for the election of six Vice-Presidents were as follows :—Messrs. Dray, Woods, Lambert, Briggs, Banham, Walters, Hunting, Blakeway, Wilson, Headley, and Walker.

The ballot was then taken, with the following result:—Mr. Dray, 14 votes; Mr. Woods, 13; Mr. Briggs, 13; Mr. Wilson, 13; Mr. Lambert, 11; Mr. Hunting, 9; Mr. Walters, 8; Mr. Banham, 7; Mr. Blakeway, 5; Mr. Headley, 5; and Mr. Walker, 2.

Messrs. Dray, Woods, Briggs, Wilson, Lambert, and Hunting were declared to be elected as Vice-Presidents.

Retirement of Treasurer.

Mr. Dray said that, owing to increased failing health, he was sorry to inform the Council that he felt compelled to tender his resignation as Treasurer. It was with great pain that he made the statement, for he should never forget the great kindness which had been extended to him by the Council. If he should not be thought dictatorial he would suggest Mr. Wragg as his successor. Mr. Wragg lived in the neighbourhood, and was a gentleman well qualified to perform the duties.

Mr. J. F. Simpson said that it was with great regret that he listened to Mr. Dray's announcement. If the Council should decide to accept Mr. Dray's resignation he should have great pleasure in supporting the suggestion that Mr. Wragg should be appointed as Treasurer.

Dr. Fleming said that last year Mr. Dray had made a similar proposition, but had been induced to retain office with the offer of assistance if necessary. Mr. Dray had been Treasurer so long, and their finances had prospered so well in his hands, that he feared without Mr. Dray as the frontispiece of their financial position the Council would not feel happy. If Mr. Dray would allow his name to be retained as Treasurer he felt sure that Mr. Wragg would gladly render him any assistance that might be necessary. If Mr. Dray would accede to that it would be a great pleasure to the Council.

Mr. F. W. Wragg hoped that Mr. Dray would still act as Treasurer, and any assistance that might be in his power to give he should only be too delighted to render.

Mr. Dray, in thanking Dr. Fleming for his kind remarks, said that if it had not been for Mr. Wragg saying that he was willing to offer assistance should he be absent from ill health, under no other circumstances would he be induced to remain in office. He thought that, generally speaking, a person should not accept office unless he filled the duties to the letter, but if he (Mr. Dray) failed to do so the Council must take the will for the deed.

Election of Secretary and Registrar.

Mr. Dray moved the re-election of Mr. Hill as Secretary and Registrar. He had no occasion to comment upon how well Mr. Hill had performed his duties, for they spoke for themselves. He was sure the Council would be delighted to re-elect him.

Professor Pritchard said he had great pleasure in seconding Mr. Dray's proposition. He would like to take the opportunity of thanking Mr. Hill for the way in which he had acted as Secretary during his year of office. He had known Mr. Hill ever since he had been Secretary, but of course he had come into closer contact with him during the past twelve months than he had done before, and he could only say that he had found everything in Mr. Hill in the shape of assistance that he could possibly desire. If he were permitted to give his successor to the chair a hint, he might tell him that he would be very well waited upon, and that he might rely to a very considerable extent upon the services of the Secretary.

The motion was unanimously adopted.

Mr. A. W. Hill (Secretary) acknowledged the kind sentiments which had been expressed towards him. His best endeavours would be always to carry out the wishes of the Council. The work naturally increased year by year, but with their kind assistance all the difficulties would be mastered. He thanked the Council most sincerely for his re-election.

Vote of thanks to the retiring President.

Dr. Fleming said that it was with great pleasure that he rose to pass a vote of thanks to the retiring President, Professor Pritchard. The duties of the President were heavy, and if they were not numerous they were sometimes extremely pressing. During recent years the duties had become still more onerous owing to the number of committees which were sitting, and therefore the tax upon the time, patience, and judgment of the President was a serious one. During the past year they had been fortunate in having a President who had been able to attend all the Council and the Registration Committee meetings. He thought from the manner in which Professor Pritchard had discharged his duties, firmly, generously, and kindly, that he commended himself to the Council as deserving a hearty vote of thanks. He had much pleasure in proposing that the retiring President be awarded a vote of thanks for the manner in which he had conducted the duties of the chair during the past year.

Mr. Barford, in seconding the motion, referred to the courtesy and urbanity with which the chair had been filled during the past year, which, he said, reflected considerable credit and honour to their past president.

The motion was unanimously agreed to.

Professor Pritchard, in acknowledging the compliment, thanked the Council for the kind expressions of opinion with reference to

the way in which he had filled the chair during the past year. As Dr Fleming had said, there had been plenty to do to occupy both mind and time. From the first moment he had the honour of occupying the chair the work had been a labour of love, and if he had succeeded in gaining the good opinions of the members of the Council he felt fully repaid for any little time and trouble he might have spent in carrying out the duties of his office.

Notice of Motion.

Mr. Wilson stated that on a subsequent occasion he should give notice that he intended to call attention to pages 60, 61, and a portion of 62 of the Bye-laws in connection with the regulations of the examination of students before they entered.

On the motion of Mr. Dray, seconded by Dr. Fleming, a vote of thanks was passed to the President, Professor Axe, for his conduct in the chair.

CENTRAL VETERINARY MEDICAL SOCIETY.

An ordinary general meeting was held at the First Avenue Hotel, Holborn, on Thursday, June 6th, Alfred Broad, Esq. (the President), in the chair, and there were present:—Professor Axe, Messrs. Banham, Elworthy, Gostling, Herron, Hunting, Hurndall, S. E. W. Lewis, Oatway, Rogers, Roots, Rowe, Samson, Simpson, Fredk. Smith, Villar, Wheatley, Willis, Woodger, Wragg and Wright.

The minutes of the preceding meeting were read and confirmed.

Letters of apology for non-attendance were received from Professor Walley and Messrs. Prudames and Slocock.

Mr. George Reddish, M.R.C.V.S., of 103, Stockwell Road, London, was unanimously elected a Fellow of the Society.

The *President* announced that a special meeting of the Society would be held on July 4th to take into consideration a report of the Council as to certain Fellows whose subscriptions were much in arrear.

Mr. Herron introduced a *post-mortem* specimen consisting of a tooth-like growth from a horse's ear.

Professor Smith then addressed the meeting on "Our Present Knowledge of Navicular Disease."

The President, Professor Axe, Messrs. Rowe and Hunting took part in the discussion.

At its conclusion *Mr. Samson* proposed, and *Mr. Rowe* seconded, a vote of thanks to Professor Smith for his address, which was unanimously carried, and the proceedings closed.

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

The quarterly meeting of this Association was held in the County Hotel, Newcastle-on-Tyne, on Friday, May 31st., the President, Mr. F. Gofton, in the chair. There were present Messrs. J. W. T. Moore, J. B. Nisbet, D. Dudgeon, A. Hunter, W. A. Hancock, W. Wheatley, W. Awde, H. Hunter, Wm. Hunter, J. E. Peele, C. Stephenson, G. Elphick, J. Aitken, A. Duvall, J. B. Askew, and the Secretary.

The minutes of the last meeting were confirmed.

The *Secretary* reported that he had communicated with Mr. Kidd, the Secretary of the Royal Counties Association, with regard to the meetings falling on the same day. It was agreed that this Association alter the date of the November meeting, provided the Royal Counties change the date of the February meeting.

Mr. Wm. Hunter, Newcastle-on-Tyne, next brought up for discussion the recent cases of pleuro-pneumonia which had occurred at High Heaton.

Mr. President and Gentlemen,—I wish to bring before you this afternoon some interesting and important particulars regarding the recent outbreak of pleuro-pneumonia in this borough, which you would see recorded in the daily press of this city on Monday last. I bring it before you solely on a point of veterinary jurisprudence, which I hope you will assist us to clear up and set at rest.

We are frequently called upon as veterinary surgeons to give evidence in courts of justice as to the nature of a disease, and how long a disease may have existed in the animal prior to death. It is very damaging to the profession for one veterinary surgeon to enter the witness-box and swear a certain disease has existed only a week, or at the utmost ten days, and another professional brother to follow him and positively affirm that the disease has existed for many months. Veterinary jurisprudence is not, as far as I am aware, taught in any methodical or systematic manner at any of our veterinary colleges, and a young man commencing his profession has to gain this knowledge by years of experience.

I was called to visit a light roan-coloured cow belonging to Mr. Oliver, of High Heaton Farm, on May 4th. I found her suffering from acute pneumonia of the right lung; I blistered her chest with mustard, and gave febrifuges and antiseptics, under which treatment she slowly but gradually improved. This was the second cow I had treated at the same place for lung affection.

On Friday last Mr. Stephenson and three other veterinary surgeons saw her; Mr. Stephenson said he could not say that she was affected with pleuro-pneumonia. She was slaughtered on Monday, and we made a *post-mortem* examination of her lungs on Tuesday,

when we found the greater portion of the right lung anteriorly consolidated from pleuro-pneumonia contagiosa, and adhering to the ribs. I asked Mr. Stephenson his opinion of the affected lung; he said it was an old encysted portion of many months' standing. Now, gentlemen, this is the point upon which Mr. Stephenson and I are at issue; in my opinion the lung has not been affected more than a month at most.

I wish to ask the opinion of this meeting upon the diseased lung. I am extremely sorry that I have not the lung to place before you, but I can assure you, gentlemen, it is no fault of mine that I am unable to do so. I urged Inspector Hedley on Tuesday last to let me have a portion of the lung if he would not let me have the whole, but he was inexorable,—I could not have any as Mr. Stephenson had left word with him that the lungs had not to be interfered with by anyone until Dr. Armstrong, Medical Officer of Health, had seen them. I described to him for what purpose I required it—to place it before our meeting to-day—but it was no use; Mr. Hedley would have his way. He promised, however, to retain for me a portion should Dr. Armstrong agree. I had to leave before the doctor arrived, but have not been able to obtain what I wanted for reasons best known to themselves. However, I shall attempt to describe the affected portion of the lung and its surroundings as well as I can. It was a large portion extending from the centre of the lobe to the pleura externally, it was about eight inches from above downwards, and ten or twelve inches from before backwards. The dead portion of lung was beginning to slough from the living, but was quite solid to the touch, and when cut into with the knife still presented the marbled appearance pathognomonic of pleuro-pneumonia. Portions or small pieces in the centre were breaking up and becoming liquefied. Now, what I wish to know is—if this lung had been encysted for many months would it have been solid and characteristically marbled? There was no sloughing where the lung was attached to the pleura costalis, the lymph peeled off the lung by being dragged out of the thorax, and presented a red papillated appearance. I also wish to ask you, gentlemen, if this large portion of lung, situated where it was, would ever have become thoroughly encysted? I have always understood that encysted portions of diseased lung were situated within the parenchyma or substance of the lung, and did not extend to the pleura.

This portion of lung in my opinion was simply undergoing the process which nature usually has of absorbing the dead piece, but the process had not long commenced, for we know that shortly after sloughing commences between the living and the dead portion of lung that granulations or processes shoot out from the living lung into the substance of the dead part, breaking it up and assisting to liquefy it, the fluid portion becoming absorbed, the granulation tissue filling up the cavity, and a small portion of caseous degenerated tissue remains behind.

Gentlemen, I trust you will express your opinions, and assist us to arrive at some definite conclusion upon this important matter.

In the discussion which followed,

Mr. D. Dudgeon thought the problem a difficult one, and one which could only be solved by those who had examined the lungs.

Mr. Hancock asked Mr. Hunter to give the history of the outbreak.

Mr. Wm. Hunter said on the 24th April he was called to a cow suffering from pneumonia; she gradually got weaker, and was slaughtered on the 30th. This cow had been in the owner's possession since last October. He had not an opportunity of making a *post-mortem.* The next was the case of the 4th May, alluded to in his remarks. Two cows were disposed of previous to the one on the 24th April, neither of which did he examine *post mortem.*

Mr. J. E. Peele thought from Mr. Hunter's description the case was one of old standing.

Mr. Elphick said that last Friday (May 24th) he went with Mr. Hunter to examine the cows. They examined three cows and came to the conclusion that they were affected with pleuro-pneumonia. On their way home they called on Mr. Stephenson, but he refused to take notice from them, preferring that the notice should come through a proper channel. When he saw the lungs they were considerably mutilated and in an imperfect state, but the idea he had formed was that it was a case of considerable standing. He had never in his experience seen so many different stages of pleuro-pneumonia as were exhibited in this outbreak.

Mr. Stephenson was surprised at Mr. Hunter, as when he came to the meeting he had no idea this question was going to be brought forward, and from what he saw when he was first called to the farm he found it to be an ordinary outbreak of pleuro-pneumonia, and it appeared to have been there for a long time. There were four cows ill, three being well-marked cases; the other, the light roan cow referred to by Mr. Hunter. He certainly could not in the living animal detect real pleuro-pneumonia, but at the *post-mortem* he found it to be an old encysted case, and there was only one piece of the lung affected and so liquefied that the cyst burst. The owner informed him that three cows had been disposed of, one on the 10th April, one on the 17th, and one on the 30th. When he first reported the outbreak he asked the Committee for an order to slaughter the whole of the thirty-one cows and six calves, but at that time they would only allow him to slaughter one. Since that, however, the whole of the animals had been slaughtered, and *post mortem* he found twelve cases of pleuro-pneumonia, four of these being encysted cases. The reason Mr. Hunter was not able to get any of the deseased lungs was because the Medical Officer of Health and several medical men wanted to see the lungs intact, but if Mr. Hunter would send to the School of Medicine he could have as much pleuro-pneumonia lung as he wanted.

Mr. Wm. Hunter said what he wished to know was whether large portions of the lung became encysted between the ribs and the deeper seated portions?

Mr. Moore and *Mr. D. Dudgeon* said they had found cysts in all parts of the lung in cases of pleuro-pneumonia.

Mr. Hancock said the discussion had been a very interesting one, and pointed out the desirability of veterinary surgeons making *post-mortem* examinations of all cases which die under their care.

Mr. Nisbet said it was sometimes very difficult to trace the origin of the disease, and instanced a recent outbreak which came under his notice, when no fresh animal had been on the farm for five years. He agreed that cysts were found in any part of the lungs.

Mr. Duvall promised to show at the next meeting some microscopic specimens of the diseased lungs.

The *President* next exhibited a number of concretions of various sizes from the bowels of a horse, the attendant describing them as "a shower of paving stones." The horse recovered, but he has an enormous bulging out at the right side, just over the liver, which is quite hard; and is evidently suffering from a diseased liver. He then related an interesting case of rupture of the stomach in a foal, in which quite a barrow-load of ingesta was found in the abdominal cavity.

A discussion then took place on Professor Williams's remarks on Tetanus made at the last meeting. *Mr. Wm. Hunter* saying he quite thought the disease was due to a micro-organism, and had treated a case succesfully with salicylate of soda and quinine.

Mr. Awde alluded to the fact of the meetings always being held in Newcastle-on-Tyne, saying how inconvenient the trains ran for members living in South Durham, and that it was proposed to form an Association for South Durham and North Yorkshire.

The *Secretary* drew Mr. Awde's attention to Rule VII, which said "in Newcastle or district, as selected by the Association," and further that the members living in South Durham had never expressed any desire, or given the Association an invitation to visit any of the southern towns. He had no doubt that the Association would go to other towns if by that means they could get increased membership, and desired Mr. Awde to convey to the promoters of the new Society these facts.

Several other matters of interest brought forward by Mr. Awde were held over until next meeting.

Votes of thanks to Mr. Wm. Hunter and the President brought the meeting to a conclusion.

G. R. Dudgeon, *Hon. Sec.*

YORKSHIRE VETERINARY MEDICAL SOCIETY.

(*Continued from* p. 458.)

Mr. President and Gentlemen,—The subject I have chosen to bring before your notice this afternoon, "Horse-shoeing and Machine-made Shoes," is an art of which individuals of every rank and grade of intelligence have their pet ideas, both as regards how a horse should be shod, and the different form of shoe to be required; in fact, so various and conflicting are the opinions expressed by those who profess to know all about this art that one wonders whether there is really any proper way of performing the operation.

I think we may start with the acknowledged fact that "shoeing" is a necessary evil; but by a careful performance of that operation this evil can be lessened to a great extent. The ancients of early times simply attached a narrow rim of iron to their horses' feet by a few rudely shaped nails, and found that if allowed to remain the hoof became abnormally overgrown, and then the shoe required to be taken off, and the superfluous growth removed, or the animal made to travel without this narrow rim of iron until it was again needed.

Much has been written and many theories have been advanced on this subject; the most illiterate and scientific have grappled with this matter. The average growth of the entire wall of a medium-sized hoof is about twelve months. Many speak as to the advisability, for the proper preservation of the feet, to pare them at each shoeing, to thin the sole until it springs under the finger on pressure; others say on no account should the foot be touched, especially the sole and frog, the cutting of these parts producing such ailments as corns, canker, thrush, laminitis, and navicular arthritis. The toe and heel also come in for discussion, as to whether the former be shortened and lowered, and the latter whether they are to be cut away. Some persons purposely cut down the heels with the idea that it prevents contraction, because flat feet always have low heels, and that by keeping the foot low it is a preventive for contraction; again, others, if the heels are cut away the back tendons are ruined.

The class of shoes and manner of applying are opinions just as varied. Some desire a heavy shoe to prevent concussions, others a light one to preserve elasticity. Then as to shape, the ordinary seated shoe some say is a most irrational shoe, some that instead of being concave on its inner surface it should be flat, so as to have a bearing both on wall and sole; others extol the Charlier system. The principal and great advantage of this shoe is the fact that the horse receives all the benefits of going barefoot, though he is shod.

Regarding the fitting of the shoe to the foot, we are told the shoe should never be applied hot, as it causes brittleness, by de-

priving the hoof of its natural moisture; others say a shoe cannot be fitted properly unless heated. The necessary number of nails required to hold the shoe in position is a debated question. Five nails is the average number, three on outer side and two on inner side for any ordinary-sized foot. Clips are required at the toe, and materially keep the shoe in position. Some say they are a source of great mischief. Very often it is not the incapacity of the smith that is the cause of bad shoeing; he is so often required by the owner of the animal to be shod to perform the operation in such and such a manner, for many people have peculiar ideas regarding this operation. It is imperative that every horse-shoer should be well informed regarding the formation and structure he has to deal with in health and disease. Flat feet require to be shod in a different manner from a hollow foot, also it depends upon the kind of work the animal is required to perform.

There are very many methods of shoeing horses, each claiming special superiority; but I think no particular rule can be exclusively carried out, for a flat foot requires shoeing in a different manner to a hollow or concave foot; also it greatly depends on the kind of work the animal is required to perform. But there is one general rule to apply to every case, and that is an endeavour to preserve as far as possible the natural shape and condition of the foot. In the matter of cutting and paring the feet there is certainly far too much of it done; but I do not agree altogether that the drawing-knife be banished from every forge, and that the foot be only trimmed by the rasp. I consider the knife the most proper instrument to accomplish it with in the hands of those who are qualified to use it.

With regard to the theory that the sole-nerve requires paring, we are told that the sole relieves itself of its waste material by natural process. Yes, so long as the foot is not encased by a shoe, and is permitted to come in contact with the ground, the consequent friction assists in the removal of superflous horn from the sole. Certain forms of feet, flat or pumiced feet, even when shod for a considerable length of time, do not require any paring of sole, frog, or even walls; but there are forms of feet in which the growth of horn is most abundant, and when shod, even for a limited period, their partial deformity is evident, and the growth is not only confined to the wall of the hoof, but to the sole, and sometimes frog. Often on removal of the shoe an accumulation of waste horn is discovered, varying from three quarters to half an inch in thickness, and which has no fibrous connection whatever with the true insensitive sole, and certainly serves no good in being allowed to remain; and I think for the good of the foot all such accumulation should be removed, and this can be accomplished with a free use of the drawing-knife, and when the true fibrous structure of the sole is reached this process of paring should stop. The walls also should be reduced to their natural proportions, but the healthy frog should never be touched with the knife.

The ordinary seated shoe I consider best adapted for draught horses. Some people condemn it as a shoe which produces corns, but if this class of shoe is properly fitted and applied there is no such danger. Some argue that the shoe should in every case have a bearing alike upon sole as well as wall, but with that I cannot agree. A well-formed concave foot when in nature's state has very little connection with the ground, so far as the sole is concerned; the wall and frog are the only surfaces in immediate contact, and the foot maintains its healthy condition, and with not the least symptoms of lameness by the non-contact of the sole with the ground. In flat or pumiced feet, when the sole does really come in contact more or less with the ground, the feet, instead of being benefited, are, to a greater or lesser extent, damaged by such contact; in fact animals with this condition of foot are actually benefited when shod, and with seated shoes, which have no bearing upon the sole. This seated shoe should always be made wide enough to cover not only the wall but also the connection between the sole and wall, and made to fit the foot and not the foot to fit the shoes; and the weight of such shoe in proportion to size of animal. Caulks to be made of equal length, and never to exceed half an inch. Very great damage is done to feet by wearing caulks of too great length, and also of unequal length. Toe-clips, especially upon draught horseshoes, are beneficial, and to a great extent they materially assist in keeping the shoe in position upon the foot.

With regard to applying a hot shoe in fitting, I think to fit a shoe properly it is quite necessary, and if done judiciously no harm to the foot is done, and if the shoe be at a red heat an application of two or three seconds' duration is quite sufficient to mark any inequalities, and when by this means the surface of the hoof and that of the shoe are made perfectly to correspond the hot shoe to be again applied for two or three seconds, to thoroughly suit itself. This gives the shoe a far better bearing than could possibly be given to it either by the knife or rasp alone.

Having spoken of shoeing generally and of ideas which are very common even nowadays, I now pass on to special shoeing, either to prevent injuries or alleviate disease.

Cutting or Brushing, produced by defective action; cause may be defective conformation. Every farrier has an idea of stopping this cutting; but, as a rule, it is generally through idleness, weakness, or want of condition, and shoeing may have nothing to do with it. I have found in cases of cutting a shoe I may describe as a three-quarter-bar shoe advantageous in severe cases.

Speedy Cutting generally occurs when an animal is overpaced, or is due to conformation. Use of a three-quarter shoe is often successful in such cases.

Clicking or Forging and Over-reach cause striking one or both of the front with one or both of the hind feet; or, in over-reach, by hitting heel of fore feet; may be prevented by lessening the

length of the step by lowering and shortening the toes of hind feet. Concave front shoes, and shoe short. Light shoes are best.

Sandcrack and False Quarter.—In two kinds both require the same class of shoe, with no caulks. When at the toe allow no pressure upon wall on either side of the crack for quite an inch, and a clasp on each side.

If a sandcrack at quarter, a bar shoe is better, with pressure upon heel to prevent any movement when the weight of the horse is placed upon it; for if you leave a space, you will find that contact with the ground presses the horn down until it touches the shoe, and when the crack is in the quarter every such movement drags it open. But before placing the shoe on, be careful to rasp away lower edge of the wall of sandcrack for an inch each side of it, as mentioned before.

Corns.—Generally due to a bruised condition of the angle of the sensitive sole, caused by heel of shoe. Nothing is so bad as a repeated bruising, for we get exostosis of angle of coffin-bone, and then always trouble of this part. Best shoe for a corn is a three-quarter shoe, or a bar-shoe in some severe cases. Care should be taken in searching or cutting corns; of course if matter exists, it is right to allow it to escape. Cutting away all the horn at the heel leaves the wall without its internal support, becoming a narrow ridge; and when weight is placed upon it it is forced inwards, causing pain and injury to inflamed structures within.

Once a corn always a corn, is the general idea; but with good shoeing the corn can be removed, and the foot acquire its original condition.

Concussion.—Nature has provided the foot against direct concussion. The foot, with its hard wall and sole, are its chief protection, together with its elastic frog and the lateral cartilages. Sometimes some disease or injury happens, and the foot is contused. It is often necessary to guard against this concussion when no definite signs of disease are present; but only the change of action indicates to the observer that pain exists. Such as the milder forms of pain you get defective action; an animal going short, or not so free in action as usual. To prevent such conditions, india-rubber pads and ring-leathers are beneficial. It is often necessary to either protect a part by covering it up, or relieve it from pressure by preventing contact with the shoe.

Punctured Foot.—The horn having been removed for examination and treatment of the wound, then protection is necessary, and none better than tow and tar, and leather sole attached to the shoe.

Broken Feet.—Often the result of a lost shoe; the quarters or toe are broken away, so that any pressure causes pain. It is then necessary to relieve pressure; utilise those parts that are sound and which are generally towards the heels, making their bearing surface lengthened; you can nail well towards the heels, for the expansion of the foot upon the ground surface is so

slight that no harm can take place; the expansion of the foot, as spoken of so much, taking place much higher up, viz. at the upper part of the heels between the lateral cartilages.

Convex Soles require a medium width of shoe, and must be carefully seated so as not to cause any uneven pressure, and of sufficient thickness to prevent direct contact between the sole and the ground, and protection by a leather sole.

We so often see a shoe attached to such feet, termed generally a "saucer" shoe, a shoe which is seated from the extreme outer edge to the inner edge, so that the foot surface of the shoe presents an incline downwards to the centre; the weight of the horse forcing the foot down this incline compressing the whole of the foot, the very object in this case to avoid.

Seedy Toe.—The heels of the foot to be kept low, to avoid throwing weight forward as much as possible, and no caulkins to shoes. After the shoe is fitted remove the lower edge of the wall of the foot where affected with disease, so that a considerable space is left between the shoe and the diseased portion. As the hoof grows this space becomes less, and the shoes should not be allowed to remain on too long, for often lameness returns by the lower edge of the affected part bearing upon the shoe. The portion of the wall that is removed, singularly enough, grows faster than that which has bearing upon the shoe.

Contraction of Feet.—Any special shoeing is useless. It is possible to do without shoes in these cases; or by tips the hoof is protected by wear, and the back part of the foot allowed free play, the entire weight being thrown on the heels and frogs increases their functional activity and promotes a healthy growth. Tips should be certainly removed once a month, or the toes will grow long and harm result.

It has been tried mechanically to expand the horse's foot by so fitting a shoe that the heels rested upon an inclined plane, exactly the opposite to the saucer shoe before mentioned, the bearing surface being inclined outwards. But this mechanical arrangement has not been attended with any marked success, only in some instances to produce lameness.

Laminitis.—No better shoe or treatment can be more effectual than Mr. Broad's shoe, the heels of the foot to be kept low and the toe shortened. Apply a lightly nailed, extremely stout, wide-webbed and long-bar shoe; the shoe to be gradually thinned from behind the quarters to the heels, which enables the horse to throw his weight better than he can in ordinary shoes or none at all.

There are many other forms of special shoes, such as elongating the toe of the shoe for contracted tendons and ligaments, &c. But I will not weary you further upon this part of my subject, but allow me now to pass on to "machine-made shoes."

Machinery in these days has brought about so many changes, especially for trade purposes, that it is not surprising the shoeing of horses is no longer to remain altogether a handicraft; and

no innovation of late years in horse-shoeing can approach in utility the present "machine-made horseshoes." Nearly the whole of our cavalry upon home service are shod with them after, I believe, most elaborate trots.

I believe the first known machine-made shoes were those of Louchaire, and made in Germany. The machine-made shoe leaves but little to be desired as regards shape, level, and nail-holes; and are sold as near-fore and hind and off-fore and hind; they are fullered, bevelled, have a level bearing, and are made in different sizes and of Swedish iron. Should machine-made shoes satisfy the demands of the art of shoeing—for it is unfortunately only too true that by far the greater number of our blacksmiths are unskilled workmen, and that properly made shoes are exceptional, and I fear very many horses are ruined from bad shoeing, want of removes, &c.—we should obtain a better and much cheaper method; and these last factors would go far towards promoting a general introduction of these shoes. The defenders of the hand-made shoes say that every shoe must be made according to the foot, and therefore a machine-made shoe will never fit. But machine-made shoes are fitted in the same way as hand-made ones, and when good material is used alterations are easily made. It is not asserted that occasionally special shoes have to be made, flat, full, or pumiced feet, horses that brush, or have weak or broken hoofs; but these are exceptions, and amongst the different sizes of the machine-made shoes there is choice sufficient to shoe nearly every horse properly.

The machine-made shoe has also produced the system of cold shoeing, and is generally greatly recommended; and observations have proved that shoes may be well fitted and put on by the cold method. It is not as convenient, and it takes more time to fit a shoe cold than to burn it on, but there is no difficulty about the operation. The hoof to be reduced with the rasp, and get the bed so level that the bearing be even everywhere. A machine-made shoe must be made of the best iron, for no shoe can be put on without having its shape altered. The shoe to be fitted cold on the anvil, when it will be chiefly a question of widening or closing the shoe to the shape of the hoof. My own slight experience is confined to the machine-made shoes as devised by Dr. Fleming, Principal Veterinary Surgeon to Her Majesty's Forces, and adopted in the army, and can be described as a concave fullered shoe, and perfectly flat upon the foot surface. The shoes are numbered in sizes from 1 to 8 for horses, and 1 to 6 for mules; and within this range they fit and suit all horses and mules with normally-shaped feet; they are applied cold, which means that a forge can be dispensed with.

I am of opinion that there is a great future in store for the machine-made shoes, and their economy and efficacy and application without the aid of a forge must in time cause them to be generally adopted, especially when they have become more

perfected. Very many large companies have them in use in England, and there appears to be an increased demand for them both at home and abroad, a fact that goes far to prove their suitability.

Their introduction into the army can only be fully understood and appreciated (I speak now as a late officer in the Army Veterinary Department) by those who have experienced the difficulty of keeping horses shod properly on field service. I now conclude with a mechanical arrangement, viz. the "nailless horseshoe," an invention that is attracting some attention, and which is said to be able to be applied to a horse's foot by anyone, who need not be an expert.

The nailless horseshoe is shaped like the ordinary shoe, but instead of being attached to the hoof by nails it is held in position by a band of steel, which passes in front of the hoof well below the coronet, and by three studs, two of which are set at opposite angles on each side of the toe, while the third is fixed immediately behind a pillar of steel, which rises in front of the shoe for the purpose of retaining the band in its place.

To fix this shoe it is necessary to raise the horse's foot, place the shoe in position, pass the band round the front of the hoof, and slip the loop in the centre of the band inside the prong, which is attached to the front pillars for that purpose. The shoe thus fixed is prevented from shifting either backwards or forwards by the shoe stud, and the band already mentioned and the front pillars; and the band passed round it effectually prevents the shoe from dropping off.

In conclusion, I may say that I wrote to the makers of the nailless shoes, telling them I was reading a paper on the subject of shoeing before this Association, and was wishful to bring a shoe before the meeting. They replied that they had no models, and I asked them to send a shoe and I would make my own models, but they replied they preferred to make their own models. I was reading in the *Field* the other day the following statement made by a distinguished member of the profession, as follows:— "Nails might be driven so as to take a wide hold, coming out of the wall in such a way that at each fresh shoeing old nail-holes might be obliterated." I should like the opinion of this meeting on that. (Mr. Mason at various points in his paper submitted models and specimens of the different shoes referred to.)

The *President* said they had all listened with pleasure and gratification to the able paper of Mr. Mason. He agreed with what that gentleman had said with regard to the use of the knife. It was necessary in some cases, but there was no excuse for the abuse as practised by some blacksmiths. He was in favour of machine-made shoes, but thought they would be better if they fitted the hoof more accurately.

In answer to Mr. Anderton (Skipton), *Mr. Mason* said the machine-made shoes he had exhibited were made by the Globe Company, of London.

Mr. Mason said the three-quarter bar shoe he had devised to suit a horse that could not travel in any other description, and the shoe could also be sharpened when necessary.

Mr. McCarmick asked if Mr. Mason had tried Lacomb's shoes for cutting.

Mr. Mason replied that he had tried them with this particular horse, and found they were not so good as the three-quarter bar, which he had also found useful in other cases.

Mr. Phillips (Veterinary Department, 13th Hussars) said he had listened with great pleasure to Mr. Mason's very able paper. Horse-shoeing was very important indeed as a question to be studied by veterinary surgeons, as it was a cause of such frequent lameness arising from that necessary evil—the introduction of nails. Whenever his thoughts dwelt upon horse-shoeing he wondered why there had been no method or invention brought forward to protect the horse's foot from wear and tear, and that they still retained the old method of driving in nails, and thus breaking the horse's foot. The method of the ancients was the method of to-day. They saw marvellous inventions and improvements on every hand, but as yet nothing seemed to have been done in regard to the protection of the horse's foot. In fact they had made it worse for the horse by substituting stone roads for McAdam. He had read an article regarding the nailless horseshoe, but he felt at once it would be useless, at any rate for the class of horses he had to deal with, hunters and animals in the service. He could not see how the shoe was to hold on when an animal was galloping over a ploughed field, or when a draft horse was putting out an effort. There was an opening for someone with an inventive mind to devise some method of protecting horses' feet, and if it was successful there was a large fortune to be made. Dr. Fleming had been most energetic in his attention to the subject of machine-made shoes. He (Dr. Fleming) was struck with the unserviceable condition of the army in the field for the want of shoeing, as it actually impeded the movements of an army. It was then the practice to take into the field large forge waggons and work up the iron on the field, but the conclusion was arrived at that this was a bad method, and Dr. Fleming devised the present machine-made shoe, and brought it into use for the service. Three fourths of the cavalry were shod with the machine-made shoes, and the other fourth with hot shoes made by the farriers out of old iron. It was found by experience that there was very little trouble in fitting the horses, and that the shoes did not as a rule require much altering. The smiths were trained to bend the shoes at the toe or heel cold, so that in the field they could easily bend them over any hard substance such as a stone. Cold fitting was of course not so good as hot fitting, but for all practical purposes he found that the animals worked well in the shoes. The only drawback he thought was that the material was not quite good enough, and that the shoe was not quite strong enough at the toe. Cold

shoeing in the service was superior in every way to the old system.

The *President* asked how long the machine-made shoe lasted in an ordinary way.

Mr. Phillips said in the service with ordinary work the shoes on an average lasted a month, and when covering between eighteen to twenty miles a day on the line of march, they lasted between a fortnight and three weeks.

The *President.*—How long does the ordinary shoe last?

Mr. Phillips.—It was the practice in the service before the introduction of the machine-made shoe to put on heavier shoes with the view of making them last a month, but they did not do so, however.

Mr. Anderton (Skipton) said for the last two years he had used machine-made Bessemer steel ribbed shoes, and had found them very good. They were easily sharpened and lasted well.

Mr. Mason said he had used steel shoes, but they would not do for Leeds on account of the condition of the streets. Horses slipped in them on the stones as though they were on ice.

Mr. Greenhalgh believed machine shoes were all right for use in the army, but for ordinary wear on paved roads he thought they were a mistake. He proposed a vote of thanks to Mr. Mason for his admirable paper.

Mr. Fletcher remarked that no doubt they had done their best to break the horse's foot by the use of nails, but the man was not born yet who had brought forward any better system. He seconded the proposition.

Mr. Anderton (Halifax) described a shoe used by the London General Omnibus Company fitted with an arrangement of springs to minimise the concussion.

Mr. Carter said he had seen the shoe referred to, but it was no use on country roads because the springs got bound up with clay.

The resolution was carried unanimously.

Mr. Mason, in reply, remarked that some of the points he had made in his paper he did not believe in himself. He merely wrote them down to cause discussion.

On the motion of *Mr. Axe*, a vote of thanks was accorded to the President, and the proceedings terminated.

W. F. Greenhalgh, *Hon. Sec.*

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

A QUARTERLY MEETING of the Midland Counties Veterinary Association was held in the afternoon and evening of Friday, May 24th, 1889, at the Star and Garter Hotel, Wolverhampton.

The President (Mr. Beddard, of Wolverhampton) occupied the chair, and there were also present :—Professor Axe; Messrs. White, Wiggins, Wragg, Over, Coe, Cole, Blunt, Price, Barnes, Hodgkinson, Tailby, Fairbank, Pemberton, Lane, Turber, Barber, Goodall, Pritchard, sen., Pritchard, Bailey, Collett, Dawes, Leather, James Blakeway, John Blakeway, F. Blakeway, Hodgkins, Carless, W. S. Carless, Perrins, Verney, Faulkner, Freer, Golden, Smith, Reynolds, Jones, Stanley, Taylor, Cartwright, Wartnaby, Trigger, Parker, Merrick, Captain Russell, Rossell, Paby, Chambers, and others.

Letters of apology for non-attending were received from Professors Pritchard, Williams, Walley, Sir H. Simpson, Dr. Fleming; Messrs. Locke, Hunting, Olver, Hill, Pyatt, Bryer, Dale, Barling, Banham, Kidd, and others.

Before the business of the meeting commenced, the President (Mr. Beddard) entertained the whole of the company present to a sumptuous luncheon in the Star and Garter Hotel. In a few well-chosen and felicitous remarks he gave the members a most cordial and hearty welcome to Wolverhampton. After ample justice had been done to the good things provided, the members removed to another room and the meeting commenced.

The first business was the nomination of new members :—The President proposed and Mr. Trigger seconded the election of Mr. Herbert Lloyd Pemberton, of Bridgnorth. The President proposed and Mr. Smith seconded the election of Mr. David Fairbank, of Lichfield. The nomination of Mr. George Henry West, of Newent, Gloucestershire, was made by Mr. Malcolm and seconded by Mr. Wragg. Mr. John Blakeway proposed and Captain Russell seconded the election of Mr. Wright, M.R.C.V.S., Hospital Surgeon to the Royal Veterinary College. The nomination of Mr. J. E. Cartwright, of Skinner Street, Wolverhampton, was made by Mr. Carless, of Worcester. and seconded by the President. These nominees were all unanimously elected.

Mr. Blakeway returned thanks to those members of the Association who had voted for his election as a member of the Council. He expressed some regret that he had not been chosen, inasmuch as the position was an honorable one; also on the ground that, having partly retired from the profession, he would have had plenty of time to devote to the duties of the office. He thought it was extremely important that a member of the Council should be a person who could attend its meetings regularly, and he drew attention to the fact that during the eight years of his connection with that body his attendances would be found to have compared very favorably with those of any other member.

The *President* said that the next business on the agenda was the revision of the rules of the Association, but that as there were three horses to be operated on it had been suggested that this question might advantageously be postponed until their next

meeting. (Hear, hear.) He would like, however, to mention the case of one rule, so that members might turn it over in their minds before the next meeting.

It had reference to the hour of meeting, which was now 2.30. A great many members had urged that if they began the meeting at 2 o'clock and dined at 5, instead of 5.30, members who had long journeys to make would be greatly convenienced. (Hear, hear.) On the motion of Mr. Merrick, seconded by Mr. Stanner, it was resolved that the revision of the rules should be adjourned to the next meeting of the Association.

The *President* announced that Mr. Wragg had very kindly brought to the meeting an interesting specimen of diseased kidney, but had consented to defer opening a discussion on the subject of kidney diseases till the next meeting, when, the President hoped, they might be able to go more fully into the matter than they could possibly do on the present occasion.

The *President* then delivered his inaugural address, which he prefaced by congratulating the Association on the presence of Professor Axe, and the fact that he was to perform a new operation for the cure of roaring. Having this in view the address would be curtailed as much as possible.

Mr. Vice-President and Gentlemen,—In accepting the presidency of our Midland Counties Association, I assure you I value most highly the honour you have conferred upon me, and feel most deeply the importance and responsibility of my position. The knowledge of my own inability to perform the various duties to your satisfaction has been a source of great anxiety, and I therefore ask you gentlemen to kindly bear with me in my shortcomings, and believe me when I say it will be my most earnest and anxious endeavour to maintain the prosperous condition of the Association and uphold the dignity of the presidential chair.

Veterinary associations have undoubtedly become most useful and powerful institutions, and with regard to our own, the Midland, I often think it must be very gratifying to those members who—no doubt with a vast amount of trouble, and often great disappointment—assisted in its foundation, to have watched its steady onward progress and its ever-increasing usefulness, and considering the grand and noble cause for which it was first founded—that of promoting, or I would rather say, increasing the good feeling and social intercourse amongst its members in addition to the imparting of knowledge and the advancement of science—I think we should look back with feelings of gratitude to those first workers in the good cause.

I was very much struck with a remark that fell from the lips of Professor Pritchard at our last annual meeting. In speaking of the increased interest taken by the members in general, in what I may term the political work of the profession, he said when he was first elected to serve on the Council he received

nine votes; since then one member has received upwards of 900, and I see by the return this year 5079 votes were recorded. Professor Pritchard said he believed this increased interest was due to the excellent work done by the various associations, and if this is so, and I am quite of opinion it is, it only shows the great and increasing value of such institutions.

In taking a short review of the veterinary profession, I think we can honestly congratulate ourselves upon having made great progress both socially and scientifically. I know there is a difference of opinion as to whether or not our improved social position has anything whatever to do with our professional advancement, and I cannot for one moment imagine how such a difference of opinion can possibly exist. We are not all endowed with the gift, nor have we the opportunity of obtaining that scientific knowledge likely to benefit and advance the profession; but we all, simply as practitioners working in and for a grand and noble profession, have our opportunities of, and responsibility in, maintaining and advancing our professional status. I consider every member who, "either professionally or socially," by his high, honorable and dignified conduct gains the confidence and approval of the public has at least done something for the future benefit of his profession. I am pleased to believe there is a greater observance than heretofore of that professional etiquette amongst practitioners which must exist if we are to progress, and I believe this is greatly due to the good work done by our medical associations. At the same time I am bound to admit there is yet something very unsatisfactory, but I trust that by a higher educational standard and continued good work done by our Association, the evil will soon be remedied.

I would like to say a word with regard to the action lately taken respecting hereditary disease in entire horses. It is undoubtedly a step in the right direction, and certain to lead to good results, and I am very pleased to see the determination shown by the examiners at shows to carry out their duties without fear or favour; but in my opinion the restrictions are not carried far enough. I consider that no horse should be permitted to travel publicly if suffering from an hereditary disease, and I believe the time is not far distant when this will become law. It is a disgrace to our country to see some of the unsound animals travelling in our midst, spreading disease in every direction, and thus causing loss and disappointment to those obtaining their services; and I believe if we, as veterinary surgeons and advisers, were to take a prominent part in the suppression of the evil, we should receive the thanks and approval of the horse-loving public, and of the owner of every sound and honest entire horse.

There is a subject that has lately received a great amount of attention, both from the public and scientific bodies, the transmission of disease to the human subject from the consumption of diseased meat or contaminated milk. It is a subject of vital im-

portance, and affords a most extensive field for study and research. I am much inclined to think the latter (milk) is frequently the source of evil, and from the great alteration that has lately taken place with regard to the place of its production, I am afraid it will become more dangerous unless some active steps are taken. Hitherto large quantities of milk have been produced in towns, where the cowsheds were under strict supervision and, apart from the owner's interest, were compulsorily kept in a sanitary condition. The bulk of our milk supply to large towns and cities now goes direct from the farmhouses, and from my knowledge of them and their sanitary condition, I am afraid there is much greater danger. The cowsheds upon many farms are old and badly constructed, little ventilation, and still less drainage; the manure is allowed to accumulate in large quantities immediately outside the door, the soak from which frequently forms a small pool, and very often the cows are permitted to drink it, and strange to say they will drink it freely. As a rule a large number of animals are kept, consequently the milking process occupies a considerable time, during which a great portion of the milk is exposed to these contaminating evils. I perhaps should not have mentioned this subject had not a disastrous case of fever recently occurred within two miles of where we are seated, and I thought it a practical subject worthy of thought and inquiry.

There are several other subjects I should have liked to have touched upon, but as our time is limited for the interesting operations to be kindly performed by Professor Axe, I close by thanking you for the patient hearing you have accorded my crude and, I am afraid, uninteresting remarks, and I again thank you for granting me the opportunity and privilege of reading this my inaugural address.

The *President* said that before they left they had a very important duty to discharge. He had a pleasing task before him, and he was sure that every member would join him very heartily in it. He asked them to support him in according the very best and warmest thanks to their retiring President for the very able and courteous manner in which he had presided over their meetings and conducted the business of the Association during his year of office. (Applause.) They knew that Mr. Trigger, during his presidency, had been the means of bringing before them some very interesting and instructive papers and subjects for discussion. He could testify that the retiring President had spared neither time nor trouble; nor, if he might be permitted to say so, expense in endeavouring to carry out the duties in an efficient and dignified manner—(Hear, hear)—and he thought that all the members would agree with him that Mr. Trigger had succeeded admirably in those endeavours. (Applause.) He had the very greatest pleasure in proposing a hearty vote of thanks to Mr. Trigger on his retiring from the presidential chair. They hoped that he would long live to

adorn the veterinary profession, for whose advancement no one could have greater desire than Mr. Trigger had. (Applause.)

Captain Russell seconded the motion, remarking that the retiring President had carried out his duties in a very able manner, and had shown himself the very man for the office. (Applause.)

Mr. Merrick (Northampton) endorsed all that had been said by the President and the seconder of the motion. They had never had a more genial President. A more able man in the chair he had never had the pleasure of sitting under. (Applause.)

Mr. Blakeway, as one of the senior officers of the Association, could entirely bear out all the remarks that had been made with regard to Mr. Trigger's performance of the duties of President. Mr. Trigger had done everything he possibly could to facilitate the work of the Hon. Secretary and Hon. Treasurer, and to promote the success of the Association generally. (Applause.)

The motion was carried by acclamation.

Mr. Trigger, in reply, said that he felt quite overwhelmed with the very kind reception they had given to the vote of thanks which their President had so ably and so kindly proposed —proposed in terms which he was sure he had failed to deserve. They had far more than repaid him for the time and trouble he had devoted to their interests, by their very cordial appreciation of his poor efforts. His year of office was universally pleasant, for he had received the greatest kindness and courtesy from every member of the Association. If there was one duty more pleasant than another during his year of office, and one that had already given evidence of its success, it was that of proposing his successor. (Applause.) Their President's address that day and the reception he had met with assured them that if he (Mr. Trigger) had given satisfaction his successor would far surpass him. In conclusion, he would say that he could not have got through his year of office so satisfactorily but for the great assistance he had received from their Honorary Secretary. He begged to propose that the thanks of the Association be given to the Secretary and other officers for their services during the past year. (Applause.)

Mr. Over (Rugby) seconded the motion, which was carried unanimously.

The members then adjourned to the President's yard in Cleveland Street, where they witnessed a successful performance by Professor Axe of the new operation for the cure of roaring upon three "roarers."

During the course of the operations running comments were made by the Professor, each part being named as the knife passed through it, and special points of difficulty being briefly dwelt upon. After the completion of the operation, the Professor received quite an ovation, and was specially complimented by many present on the wonderful dexterity, surgical skill, and rapidity with which the operations were performed. The Pro-

fessor then gave a short address on the after-treatment, and gave instructions that the tampon cannula should be removed twenty-four hours after the operation, that afterwards antiseptic spray be thrown into the larynx three or four times each day, and the external wound kept clean, and any exuberant granulations cauterized. In four to six weeks the wounds would be healed, but ten weeks should be allowed to transpire before any test was adopted for trying the patient's wind.

The members afterwards dined together, and spent a very pleasant and enjoyable evening. Several songs were sung by Messrs. Leather, Faulkner, and other members present.

The usual toast list was gone through, and that of the President was received with musical honours and three times three, and thus a very happy and instructive meeting was brought to a close. JNO. MALCOLM, *Hon. Sec.*

ROYAL SCOTTISH VETERINARY ASSOCIATION.

A QUARTERLY meeting of this Society was held in the library of the Royal Veterinary College, Edinburgh, on May 1st, 1889.

The President (A. Reid, Esq.) occupied the chair.

The following members were present:—Professors Walley, McFadyean, and Baird; Messrs. Campbell, Pottie, Barclay, Baird, Combe, Scrymgeour, Fingzies, Young, and Fairbairn.

The minutes of last meeting having been confirmed, the following gentlemen were elected members of the Society:—Messrs. Young, Harle, Bird, Cowan, and King, proposed by Professor McFadyean, and seconded by Mr. Barclay.

Professor Walley nominated for election Mr. Baines, Golspie.

The Secretary nominated for election Mr. King, Ayr.

Mr. Pottie, Paisley, then exhibited and explained a form of truss he had invented for the treatment of inguinal and scrotal hernia, claiming for it a distinct advance on the treatment of that form of hernia.

Mr. Campbell, Kirkcudbright, then explained and exhibited his form of truss, which appeared to be of a more simple form, and had been found by Mr. Campbell to have the desired effect.

A very interesting and profitable discussion ensued, most of the members taking part.

Professor Walley directed attention to several matters of professional interest.

(1) He exhibited a colossal diagram of a transverse section of a pleuro-pneumonic lung of a cow which had been subjected to the influence of boiling, and explained that very many years ago he directed the attention of his class to this method of dealing with the lung in cases where a doubt existed as to the nature of the lesion, the plugged condition of the vessels, the thickened state of the peribronchial tissue, and the bronchial mucosa; the

thickening of the interlobular tissue and the consolidation of the lobules all being brought out in a much better manner by this method than by any other that could be adopted, and that too owing to the coagulation of the large quantity of albuminous matter which was arrested in the meshes of the different tissues involved in the lesion.

(2) He exhibited a large section of a multilocular (hydatid) cystic liver from a cow, in which the whole of the liver structure had been removed by the pressure of the cystic growths which were grouped together in a compact mass, giving the external surface a "paving-stone" aspect, and the surface of the section a "cavernous" aspect. The case came under the observation of Mr. John Roberts, of Wrexham, under whose treatment the cow had been for a short time prior to death. The symptoms were ambiguous, the most striking being a rotund appearance of the body, great emaciation, and excessive diarrhœa. On making a *post-mortem* examination, Mr. Roberts found an enormously enlarged liver, the gross weight of which was 1 cwt. 2 qrs. 5 lbs., a weight, Professor Walley remarked, far in excess of anything which had ever come under his personal observation, and from the extensive annihilation of liver tissue, the wonder to him was that the animal should have lived so long as she had done.

(3) He exhibited a number of monstrous lambs, and remarked that while the present season was probably one of the best lambing seasons, both for number and quality of lambs, it had been very prolific of monstrosities. The most interesting cases cited by him were (*a*) a pesocephalous monstrosity, in which on the anterior surface of the aborted head was seen a transverse irregularly shaped fissure, from either commissure of which a perfect (external) ear opened in a lateral direction. This specimen had been secured for him by the assistant inspector at the slaughter-house, Mr. Doig. (*b*) A perosomian monstrosity in which the head and thorax were single and the posterior, dorsal, and the lumbar region were double, with eight legs, two tails, and four ears, one pair of which had their origin from a common base in the centre of the forehead. This specimen had been forwarded by Mr. Murray Lornie, of Alyth. (*c*) A monocephalian monstrosity, in which the head, neck, and forelegs were wanting and the thorax fissured. Dissection revealed entire absence of thoracic and of urinary organs, of stomach, and, with the exception of scrotum and testicles, of generative organs. The testicles were situated one on either side, intimately attached to the reflected angle of the posterior false ribs. This specimen was forwarded by Mr. E. H. Jones, Mossley, Manchester.

Mr. Campbell's case was a polymelian or parasitic monstrosity.

Purpura Hæmorrhagica.

Professor Walley introduced the subject of purpura, a disease which he said had raged to an unparalleled degree during the autumn and early winter months.

In the experience of most practitioners a few cases of the disease were annually met with, but the number of such cases—at least within a tolerably large area around Edinburgh—had never been so great as during the above-mentioned period. Purpura was not to be dreaded when influenza, strangles, and allied affections were prevalent, and when barometrical and local hygienic conditions were unfavorable, but during this season the affection had assumed the proportions of an enzooty, and the cases were of an unusually intractable character. As the members had all probably experienced, there was in the autumn an epizooty of influenza of a comparatively mild type and of a catarrhal-bilious character, and strangles also had prevailed to a tolerably large extent; indeed it was as a sequel to the latter disease that many of the cases of purpura had arisen, but in others—and he (Professor Walley) wished particularly to direct their attention to this point—the affection had made its appearance in animals in whom no (or only very slight) premonitory symptoms had been observed.

In reference to strangles he might remark that during the autumn he had his attention directed to an outbreak in which eighteen out of twenty horses were affected, and in whom there was almost universally suppurative cellulitis with the formation of unlimited abscesses in various parts of the body, and in only three or four of the animals did the disease run through its usual course. As the members had probably noticed, Mr. Malcolm, of Birmingham, had recently placed two outbreaks of a similar character on record.

As a sequel of strangles the first case which came under his notice occurred in a horse about which he was consulted by Mr. F. Tonar, M.R.C.V.S.

The symptoms presented were those of septicæmia, combined with those of purpura, and from the general condition of the animal and the state of the buccal cavity he (Professor Walley) expressed the opinion that they might expect at any moment symptoms of enteric disorder followed rapidly by death.

He was at once informed that enteric symptoms had been shown several days previously, and that treatment for their amelioration had been adopted. This horse succumbed to the effects of the complicated disorder from which he was suffering in a few hours after his (Professor Walley's) visit, and on *post-mortem* Mr. Tonar found extensive disease of the great colon, which on being examined revealed a condition allied to that which is sometimes met with in cases of so-called enteric fever, viz. the formation of large sloughs of the intestinal mucosa and the submucosa. The condition so much resembled that shown in a sketch which he had had taken many years ago, and which he submitted for their inspection—as well as the specimen of which it was a representation—that he did not think it necessary to preserve it for their inspection.

On the 5th of December Mr. Barclay forwarded the stomach and a portion of the duodenum of a four-years old carriage gelding in which purpuric lesions were marked, and which (although it was considerably altered by preservation) he submitted for their inspection. When fresh the conditions presented were extensive hæmorrhagic and serous infiltration of the whole structure of the organs, the intramural distribution of the lesions imparting a stratified character to the section. In the thickest parts the swelling was two inches in extent. The history of the case, as detailed by Mr. Barclay, was as follows :— The horse had been the subject of strangles for a period of three weeks. Early in the morning of the 3rd (3 a.m.) Mr. Barclay was hurriedly summoned to see the patient, the messenger stating that he had been rolling about since 7 o'clock the previous evening. On his arrival Mr. Barclay found all the symptoms of gastric tympany and gastric pain present and treated the horse for these, relief being afforded in about an hour, from which time the animal stood in one position until death—which took place two hours subsequently—supervened. From the symptoms presented Mr. Barclay came to the conclusion that the horse was suffering either from gastric, intestinal, or diaphragmatic rupture. *Post-mortem* revealed a rupture, eighteen inches in extent, of the great colon in addition to the gastric lesions. The pyloric orifice was occluded by a large clot of blood which had been thrown out from the vessels of the mucous membrane.

About the same time he (Professor Walley) and his colleague (Mr. Baird) had under their joint care a desperate case following a period of several weeks of apparent convalescence from strangles, and in which tracheotomy had to be performed in order to prevent suffocation from bronchial effusion, and in the same establishment they had another horse convalescing from a severe attack of the disease (after influenza) in which lung lesions had been succeeded by putrid disintegration of the damaged lung tissue. He (Professor Walley) could not pretend to offer a satisfactory explanation of the extraordinary prevalence of this malady, but it had assumed such extensive proportions as to lead him to the conclusion that there must be some special atmospheric conditions which of themselves tended to depress the vital powers and to cause a perverted state of the functions of nutrition, even if there was not some special causal entity such as a micro-organism. His experience in this outbreak had strongly confirmed one fact which he had previously observed, viz. that those animals who had previously suffered from lung affections, and in whose lungs there existed areas of damaged tissue, were extremely likely to suffer from rapid putrefactive disintegration of such tissue, and as a result from septicæmia the absorption of the septic products he thought might, in some instances at least, explain the production of the purpuric lesions. He might also mention the fact that in one case the horse had

suffered from an attack of purpura about eighteen months before, and at that time had made a good recovery, and further, in order to show that the causes in operation to produce the disease were not of a purely local character, he would direct their attention to the fact that the disease had appeared in large studs of horses in which it was previously absolutely unknown. W. D. FAIRBAIRN, *Hon. Sec.*

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

(*Continued from* p. 454.)

The *President* called upon Dr. Cullingworth to open the discussion, remarking that they must all be very pleased indeed with the fair way in which Mr. Wolstenholme had introduced the subject.

Dr. Cullingworth (who was received with applause) said he should have preferred to have taken part in the discussion after hearing the experiences of some of the veterinary surgeons present. However, as he had been called upon by name he would, as briefly as possible, tell them what had occurred to him in thinking this matter over, in reading on the subject, and in listening to the paper of the evening. Let him begin by saying that Mr. Wolstenholme was perfectly correct in thinking that when he (Dr. Cullingworth) entered into the correspondence on the subject of the analogy between parturition in cattle and puerperal fever in the human subject he was ignorant of parturient apoplexy. He had, however, made it his business since to look up the literature on the subject, and he had gathered from what was given in the recognised text-book of this country of Dr. Fleming, and the recognised text-book on the subject in France by M. St. Cyr, that the disease in cattle is not analogous to the fever in the human subject. So far as the analogy was concerned, therefore, he would abandon that contention, and at once admit that there was no analogy between puerperal fever in women and parturient apoplexy in cows so far as their symptoms and *post-mortem* appearances were concerned. Still, with an eye to preventive means of treatment, he thought something might be gained if they could discover what was the etiology of parturient apoplexy. (Hear, hear.) Was there any analogy at all between the etiology of puerperal fever in women and parturient apoplexy in cows? Now, to this point he would confine his attention. He believed for himself that there was. He hoped for the sake of their common science and for the sake of their common art that there was, because it was upon this analogy being the true one that they might hope to found any hopeful measures for prevention and for cure. He took it that Mr. Wolstenholme's description of parturient apoplexy was a generally accepted one,

and he had described it as coming on with some suddenness within from twenty-four hours to three days after calving; that it ran a course sometimes of twenty-four hours, sometimes of four days, and then either the cow died or quickly recovered. Perhaps he had in this brief sketch mixed up Mr. Wolstenholme's remarks with his (the speaker's) recollection of what he had read in the works he had consulted on veterinary obstetrics; if so, he asked pardon. That, however, he thought might be taken to be the accepted opinion of those who had seen most of this very interesting and peculiar affection. The symptoms of parturient apoplexy were those of gradual loss of interest in the calf, loss of appetite, increasing weakness, following either with spasm of the muscles of the neck or a more complete prostration, the animal lying extended. Now the question was, To what did these symptoms point? Were they due to a form of poisoning, or were they due to a distinct disease? The *post-mortem* appearances in parturient apoplexy, they would all admit, were mostly negative. As to the word "apoplexy," of course it was an entire misnomer; there was no apoplexy. (Hear, hear.) In one or two instances there had been found a clot on the brain, but any affection from which an animal could recover in four days could not be what they understood as being apoplexy. The word "apoplexy" they accepted here because it was convenient, but they denied altogether that it was really apoplexy.

The *post-mortem* appearances, as he had said, had been mainly negative. There were a few instances where certain lesions in the brain and its membranes and serous effusions in the lateral ventricles had been recorded, but it was explained that they were not so constant as to be at all worthy to be called pathognomonic of this disorder; they were probably purely accidental phenomena when they had been discovered. There was no gross lesion that was constant in puerperal apoplexy, therefore they might say it did not correspond to any known disease. It was not an inflammation of the uterus and the lung and the brain, assuming a particularly severe form, because of the fact of its coming soon after calving. It was not a local disease with severe general phenomena. Now, not being a local affection, what was it? Was it not most likely (reasoning again from analogy) that this was a sort of poisoning—that it was a toxic affection? He was not asking them to say it was due to septic affection, but he maintained that the symptoms and *post-mortem* appearances pointed to some blood-poison as being the cause of those symptoms and *post-mortem* appearances. They were much more in accord with that than any known affection. What was the history of a case where blood-poison was introduced? When the poison had spent its force the patient recovered from the influence of the poison, and quickly recovered. If he was right in thinking there was fair ground for supposing the influence at work here was a toxic influence, what was most likely to be that toxic influence? Well, Mr. Wolstenholme had brought forward some facts that made it difficult to maintain that this conformed with the

ordinary result of septic poisoning. He had shown, for example, that whereas in ordinary forms of septic poisoning there was a distinct rise of temperature, here the temperature was not raised, but was generally somewhat lower than formerly. He had shown, moreover, that in the cases of parturient fever and the case of puerperal fever in the human subject it was of far more frequent occurrence in cases where manual or instrumental interference had been necessary than in simple, easy, straightforward labours. These were undoubtedly difficulties in the way of accepting this as a form of septic poisoning, and yet he (Dr. Cullingworth) should be very loath indeed to accept the view that it was not a form of septic poisoning. How then were they to get over these very great difficulties? He acknowledged them to be difficulties. Might he suggest one or two considerations? He did not say they completely answered or did away with the difficulties, but they were points which were just worth bearing in mind. They had instances of blood-poisoning that were unaccompanied with a rise of temperature. No one would doubt, he supposed, that lead paralysis was a form of blood-poisoning? He was not aware that lead paralysis was accompanied with a rise of temperature. Diphtheritic paralysis was another form of paralysis which was undoubtedly due to blood-poison, but the rise of temperature which accompanied the original contact of diphtheria did not occur, so far as he knew, when the original symptoms of paralysis made their appearance. He had taken some pains to try and ascertain whether there was any case on record where pure and unmistakable septicæmia had occurred without a rise of temperature. He had so far not been able to lay his hands upon a record of such a case. In the records of Dr. Calk on septicæmia as it occurred in mice—a mouse being an animal extremely susceptible to septic poisoning—he had not made any record of the temperature unfortunately, but he concluded his paper by saying that no doubt records of temperature would have been interesting had they been made—which was one of those tantalising remarks that "sent one empty away." (Laughter.) But just let him (Dr. Cullingworth) tell them what the symptoms in mouse septicæmia were. After the injection of a small quantity of putrid blood into mice, in about one third of the number so treated, the animal remained healthy for twenty-four hours. Then the eye became dull and watery, the animal became languid, either moving little or sitting quite still, with back bent and limbs drawn up. It then ceased to eat, respiration became slow, weakness increased, and death occurred without convulsions in from forty to sixty hours. On *post-mortem* examination the internal organs—excepting spleen—were quite unaltered. After this one tenth of a drop of the blood of the animal that had died under these circumstances was inoculated into another mouse, and exactly the same set of symptoms occurred in exactly the same time. A large number of mice being inoculated, in not one instance did the inoculation of a very small fraction of a drop of blood from the septicæmic mouse fail to produce similar symptoms. It seemed to

him these symptoms and the absence of *post-mortem* appearances were not extremely remote from those they found in parturient apoplexy. They were more akin to parturient fever in cattle than puerperal fever in women. With regard to the other difficulty of the easy labour one must remember this, that there were two very distinct modes by which the poisoning might occur in puerperal septicæmia—he used that phrase because it was comprehensive—one was from septic intervention from without by the hands of the person assisting, or somehow or other by the instruments and so on; and the other was by the decomposition of portions of the membranes or after-birth remaining within the uterus. Now, they were not entirely unacquainted with the occurrence in the human subject of cases of puerperal fever from the latter cause. Where labour had been easy, where there was no manual assistance, and yet where portions of the after-birth or membranes had been retained and had undergone putrefaction, then there was given off from the portions so retained a poison, probably of a chemical nature, because it ceased the moment the uterus was cleansed, which it would not do if it was due to micro-organisms in the blood. It was accompanied by the presence of bacteria undoubtedly, but there were no micro-organisms in the blood, otherwise flushing the uterus certainly would not immediately stop the symptoms. They could only rid the uterus of putrefying matter; and in these cases, which they called septicæmia which were due to chemical causes, after they cleansed the uterine cavity the symptoms subsided. If they did not cleanse the uterine cavity what happened? Sometimes the patient died, sometimes the poison expended its force and the patient recovered in spite of it. Was it not possible—he merely threw out this as a suggestion—that in the cases of parturient apoplexy the poison, in those cases which occurred in the absence of manual or instrumental assistance, had entered in the method he had now described owing to the unsuspected retention of portions (ever so small) of blood-clots in the membrane, and the throwing off from the putrefied matter of a chemical poison? That was what he had chiefly to say about the points of analogy.

One point more. It was perfectly clear from what Mr. Wolstenholme had said, and from what all authorities said upon the subject of parturient apoplexy, that it was a disease peculiar to cows. They must not, therefore, expect to drive the analogy too close, if any analogous disease at all existed in the human female. As to puerperal eclampsia, there was no analogy between parturient apoplexy and puerperal eclampsia in women. There was a puerperal eclampsia in cattle, but that was not the disease they were discussing. There were other points of difference which entirely disassociated the one from the other. There was no analogous disease to parturient apoplexy in the human subject so far as he was aware.

Now, he spoke under correction, he felt he was rather getting into deep water if he began to speak of diseases of animals of which he only knew by reading, but he thought in the reading he

had gone through (in consequence of his interest in this subject, commencing with the correspondence that Mr. Wolstenholme had read) he had come across a description of diseases which occurred after foaling in mares. It was called parturient laminitis. So far as he could gather, this was a disease absolutely peculiar to that species. Certainly Dr. Fleming said so, and St. Cyr said so, although they seemed to be copies from one another; and whether St. Cyr had translated from Dr. Fleming or Dr. Fleming from St. Cyr, heaven only knew—he did not. (Laughter.) That was a matter between themselves. In those two learned books he found that it was a disease to which mares alone were subject. Now, this disease also was very peculiar. It consisted of inflammation of the foot. He would not go into it, because it was beside the mark. It was a disease occurring on the third day after foaling, and it generally ended in recovery. It ran a definite course of a few days, and its local manifestation was inflammation of the foot and tenderness on the hoof. It appeared to him that this occupied somewhat a similar position with regard to mares that parturient apoplexy did with regard to cows—that both were diseases special to the particular species, and both coming after parturition certainly seemed to have some definite connection with that process. He found that the authorities gave a very large number of theories of the etiology of parturient apoplexy. He was reminded, in looking at them, very much of the literature of puerperal fever, which simply bristled with theories as to its mode of origin and mode of propagation. It had been put down to a grave form of gastric fever, and the result of mephitic gases, from the lack of the retention of waste products owing to the suspension of the functions of the mammary glands. It had been put down to a form of milk fever, said to be due to the sudden removal of blood from the uterus flushing the neighbouring vessels beyond measure and producing collapse. It was said to be due to air in the veins of the brain (that was to say too little blood in the brain), hyperæmia (too much blood in the brain), and œdema of the brain—variations of derangement of the ganglionic nervous system. Dr. Fleming gave an explanatory account of what he meant by the "nervous system," and he (Dr. Cullingworth) would bring his remarks to a close by reading this sentence (and he should be glad if anyone could throw any light on its meaning):—"A too easy birth throws out of play a certain amount of the nervous force destined to the accomplishment of this act. Hence, there is a disproportion between the polar tension of the force conveyed by these nerves and the muscular irritability, and consequently an obstacle to the conductibility of the nerves charged with the distribution of this superfluous portion of the nerve force." (Laughter).

Professor Penberthy (received with applause) said it afforded him very great pleasure to address the Lancashire Veterinary Medical Association for the first time, and the pleasure was enhanced by the knowledge of the fact that practitioners of both branches of medicine had met to discuss a subject which had by some—

possibly by some mistake—been considered to have special relation to both branches practising in medicine. He could only be echoing their sentiments, he was sure, if he said he had listened with a great deal of pleasure to the speech of Dr. Cullingworth on this matter. (Hear, hear.) He had given them a distinct line to go upon; he clearly led them to understand that he withdrew, or that he yielded to their ideas, as to the relation of puerperal septicæmia in the human female and parturient apoplexy of the bovine. This was a subject which had been especially interesting to him (the speaker) as all subjects which were not clear should be interesting to every scientific man; and they were specially indebted to Dr. Cullingworth for having impressed them with the importance of teaching the etiology of the condition; and as he had suggested, the open road for the discovery of the cause is the morbid anatomy. There were certain conditions of which they were aware which had no real definite morbid anatomy. Yet they were as certain, from their knowledge of physiology, where those conditions were primarily produced—where the inciting factor was at work—as they could be if they could see the lesions. Take that of rabies, for instance. It had just occurred to him there were no gross lesions in rabies which gave rise to the symptoms; and as they came to the more highly developed parts of the organism so would they find a larger number of symptoms—more phenomena arising from fewer gross lesions. He had no doubt puerperal apoplexy was immediately brought about by something acting on the motor area as well as the organic area of the brain. Whether it be due to some special toxic matter in the blood or to other conditions it was not for him to say; but there was one thing specially worthy of consideration—why should a cow suffer from the condition? Well, it struck him in this way: the cow had been domesticated and, in domestication, had been subjected to artificial conditions, the principle of which was the production of fat and of milk. He did not think St. Cyr or Dr. Fleming gave any record of parturient apoplexy occurring among wild animals; he had searched other authorities and had never met with such a case. In the domestic bovine, after the third calf, when this production of fat was at its height, they were more liable to have this parturient apoplexy; it was not the cow that gave thirty quarts of milk a day, but the cow that gave so many pounds of butter a day. That had been his experience, and the experience of many others. They found it not only in individual animals that were specially good butter producers, but they found it more commonly in shorthorns which had been selected for this property of fat production. That was the most approximate speciality—or the speciality which was most closely related, in his mind, to the condition of parturient apoplexy in the cow. They had been told by Dr. Cullingworth that the term "apoplexy" was a misnomer; and had it not been for a few recoveries, he (the speaker) did not think they could have the slightest doubt that it was apoplexy. Apoplexy, as he understood it, did not depend upon a clot of blood. They might

have a pressure of effused matters getting on the brain. There seemed to be some reason for supposing that they had, at the very least, a debility of vessels. He did not know whether it would be news to Dr. Cullingworth—it would be to some of them—but this apoplexy (be it special or common) did occur prior to parturition. It had been his good fortune to see two cases (he might say bad fortune, for in one case the cow was his own) in which the cow, due to calve in three or four days, had an apopleptic fit, with the usual falling which they noticed in parturient apoplexy. His experience was that there was an absolute inability to gain their legs, and in the majority of cases consciousness was so far lost that there was an absence of desire to move whether the power to do so was there or not. They were rather staggered by the large number of recoveries without any temporary or permanent paralysis—he must say that in the majority of cases the result was fatal; but in the minority he was perfectly open to allow that there was something to stagger them in that they did not get more long-abiding paralysis after an attack. He and a colleague had made a good many *post-mortem* examinations of the brain, having had an idea that there was some organic structural change in the brain, and they were almost led to the conclusion that there was a fatty degeneration of the arteries of the brain. Now, he was bound to say that he could not account for the recoveries, which were comparatively few. Against any form of septicæmia they had to put those few cases—and they were very few—which occurred prior to parturition. He believed St. Cyr and Dr. Fleming both reported cases after abortion, and in those cases the toxic theory would be more feasible than ever; but in the two cases he had mentioned the calves were born alive in perfect health, and the occurrence was absolutely sudden—much more than, in his experience, he should expect after injection of any product of bacteria. The suddenness of the attack rather staggered him in receiving the toxic view. His mind was thoroughly open on this subject—he had no very great impression upon it. It was a condition about which they all had an individual opinion, whether it be well formed or not.

Dr. Sinclair (responding to the call of the President) said he came there to learn, and with absolutely no other purpose, and he had heard a great deal: listening to the evidence as a member of a jury he must say he had come to no theory. As far as his previous knowledge went he had come to the conclusion that there was absolutely no relation between septicæmia and parturient apoplexy. His experience of puerperal fever in the lower animals was gleaned in observing an epidemic among a flock of sheep in the south of Scotland, in the lambing season. There was considerable mortality in that season on the farm where he was staying, and he came very decidedly to the opinion that puerperal fever in sheep and puerperal fever in a woman were exactly the same disease—(hear, hear)—that they were exactly analogous. (Hear, hear.) With regard to parturient apoplexy, he did not regard the term "apo-

plexy" as such a serious misnomer. He thought the last speaker had made a mistake in not going on and giving them more details. It seemed to him (Dr. Sinclair) if they took the facts of this disease as known only in the cow, there was one definite fact—there were certain kinds of animals exempt; they only found it in the elderly animals whose tissues were beginning to degenerate. In the course of the disease there was clearly no rise of temperature. With regard to the series of cows that Mr. Wolstenholme quoted from—those of Dr. Thomas, of Preston—it was a totally different class of disease. They were usually guided by the evidence, and unless gentlemen would make exact observation, then they were very liable to mix up two kinds of cases. He thought those cases in which there was a rise of temperature and a quick feeble pulse, and all the rest of it, were probably cases of acute bacterial disease. The fact that it was only found in elderly cows, in animals in which they would expect to find degeneration of the tissues occurring at the time at which there was a sudden change in the blood pressure—(for he should disregard the case of a change occurring ten days after labour)—taking these facts, they were driven to the conclusion that parturient apoplexy was a disease somewhat similar to (?) epilepsy. They had it in the convulsions occurring to the drunkard in a state of chronic alcoholism, or in the convulsion that occurred after certain poisons. Of course, he merely gave an opinion, but he would like to say a word or two to justify the position of antagonism he appeared to take up to his friend Dr. Cullingworth.

First of all Dr. Cullingworth appeared to be desirous of proving that this was a septic disease. He thought that was a most dangerous attitude for a scientific man to get into. Dr. Cullingworth would admit, of course, that the proof was not sufficient; and if they went on the wrong tack and sought to prove that the disease was owing to a certain cause it was a positive hindrance to getting at the true cause. (Hear, hear.) There was one thing certain about all septic diseases, that a rise of temperature was an absolutely constant phenomenon, and to mention those cases where they had puerperal peritonitis with low temperature was positively introducing not irrelevant evidence but false evidence.

Dr. Cullingworth.—I withdraw that unmistakably to-night. That was written in a letter, but I withdraw it, because I wrote it in ignorance of the condition known as parturient apoplexy.

Dr. Sinclair said the point he wished to make clear was this, that in all septic disease, either puerperal fever or whatever name they might call it by, there was always a rise of temperature; and when it was said that puerperal peritonitis existed without a rise of temperature it was mistaken evidence, because it simply meant that the exact observations had not been made in sufficient time. They knew perfectly well there must be found a rise of temperature in the early stage of the affection. They knew that the lowering of the temperature was one of the most ominous signs they could find in cases of poisoning.

With reference to the proof of a septic origin, it seemed to him (going back to Dr. Cullingworth's remarks on the analogy of such things as lead-poisoning) that was a chemical poisoning, and they were not speaking of the same things when they spoke of animal poisons of bacterial origin. He must say from his previous observations of puerperal fever of the lower animals and of the facts of the cases of parturient apoplexy, he was clearly of opinion that parturient apoplexy was a totally different disease; and the way to clear it up, to make absolutely certain of the nature of the disease, must be by means of careful observation of the morbid anatomy, and by a careful analysis of all the products that could be obtained both before and after the parturition of the cow.

Professor W. Alston Edgar, F.R.C.V.S., said they might sincerely congratulate themselves on the turn which this discussion had taken. Their profession as veterinary surgeons brought them into contact with the great stockowners of the country, and when they saw the medical profession apparently in conflict with their own it was deeply to be regretted. They were all glad at the generous and frank withdrawal by Dr. Cullingworth from the position he had taken up in opposition to Mr. Wolstenholme. It might also be hoped, in the interest of stockowners, that Dr. Thomas would be equally willing to make a candid retractation from the conclusion he had published in his paper in the January number of the *Veterinary Journal*, as it was exceedingly unfortunate to find a gentleman of Dr. Thomas's high scientific attainments at issue in veterinary literature with nine tenths of the profession to-day. So far as the discussion as to analogy of parturient apoplexy in the cow and puerperal fever in women was concerned, it was practically at an end. They all admitted these were two distinct diseases, and they were now drifting into a discussion that might occupy them a week or a year. Dr. Cullingworth had pointed out to them the vast amount of conflicting theory that existed in their text-books as to the cause of parturient apoplexy. He (Dr. Edgar) desired to speak clinically only upon this division of the subject, and he was free to admit, after having seen over five hundred cases of parturient apoplexy during the last fifteen years, that he was just as much in the dark with regard to its anatomical etiology as he was when he commenced practice; but he could claim a most definite knowledge of causes and conditions leading up to the actual development of the disease.

Those who had had practical experience were prepared to say that there were certain causes and conditions that would operate to a certainty in the production and development of the malady. Its clinical history and successful preventive measures were entirely opposed to any theory of organic or chemical poison as suggested by Dr. Cullingworth in his remarks upon lead-poisoning and mouse septicæmia. The primary causes centered around the animal's breed, age, milking qualities, and plethoric condition, with loaded viscera (rumen, &c.) at the time of parturition. He believed the profession was almost unanimous in regarding parturient apoplexy

as a preventable disease if proper dietetic and medicinal treatment were instituted. In successful preventive treatment antiseptic precautions played no part whatever. Professor Penberthy had drawn attention to fatty degeneration. He (Professor Edgar) thought they should be clear in distinguishing between the function of fat separation in milk secretion and storing up of fat in the tissues. For example, some of our most improved shorthorns were very bad milkers, and might be excessively plethoric at parturition, yet they possessed a remarkable, almost complete, immunity from parturient apoplexy. Heavy milkers, on the other hand, were immensely predisposed to the disease. It had been a terrible scourge to him; he had been driven from one theory to another, he had sought in vain comfort from the text-books. As practical men they did not want a theory that would not hold good with one cow equally with another. He was glad that the theory of blood-poisoning, in any form whatever, had received a strong negative at that meeting. All of them were familiar with lead-poisoning in cattle, and they drew a distinct line between mechanical and organic poisons. Dr. Sinclair had alluded to epilepsy. Cows suffered from a form of epilepsy entirely distinguished from parturient apoplexy.

As he had said, he looked upon the malady as a preventive one, provided they were allowed to adopt preventive treatment. (Hear, hear.) He would give an example which had come under his personal observation. From July to Christmas three cows belonging to the same owner calved, and each one went down with parturient apoplexy. One animal lay insensible about thirty hours, and after having had paralysis of one leg three weeks it recovered; the other two had complete coma, and were killed in that stage of the disease. The owner became frightened for three other cows he had. Preventive treatment was suggested and was agreed to. These cows were treated dietetically and medicinally, and they had since calved successfully. Such cases as this were, to the stockowners, tangible evidence that the disease was not contagious.

A special point had been made of the temperature in this disease. He might be allowed to mention that in a series of experiments he had made upon parturient cows, he had found that normally the temperature commenced to fall a few hours before calving, and was at its lowest point (one to two degrees full) about thirty hours after parturition, which it would be remembered was a critical time for the onset of parturient apoplexy.

Dr. Thomas (also in response to the call of the President) said in the first place he would explain why he wrote the paper in the *Veterinary Journal*. At the institution to which he was one of the medical officers they had a large number of dairy cows, and they had considerable mortality from a certain disease which the veterinary surgeon in attendance on the cows proclaimed to be milk fever. He (Dr. Thomas) naturally took some interest in the case, as it seemed to present special sort of symptoms that were similar in all those cases. He read up the literature as far as he was able to get the books on the subject, and he saw so many

theories mentioned as being the cause, and so many theories with regard to the nature of the disease, that he concluded that it was not at all settled in the minds of practitioners as to what it really was. He thereupon looked into the subject of the bacteriology of it, and he could not find that there had been any records published. He, however, examined the organs himself, and he found those germs or bacteria present in every case. That circumstance led him to write the paper, thinking if anyone else had seen similar organisms it might induce them either to agree with what he had found, or simply to say they had not found them. Professor Edgar had said he hoped that he (Dr. Thomas) would retract his views with regard to the disease being a form of septicæmia. The discussion before the meeting was mostly as to whether this disease had any analogy to puerperal fever; but that was not the subject exactly that he went into in his paper. There was no doubt that among cows there was something special—whether it was that the constitution of the cow was different from that of the human being, or whether it was a special disease, he would not offer an opinion. In these cases that came under his notice, they were all old cows, and their symptoms quite agreed with what was mentioned in the text-books on the subject. He gathered from what Mr. Wolstenholme had said that he was rather disinclined to think those cases were not parturient apoplexy. So that it might be that he (Dr. Thomas) had been investigating a totally different disease, and he came here in the hope really of hearing further opinions of the symptoms so that he might consider whether these were cases of parturient apoplexy or not. There was one omission in his case, and that was to record the temperature; he did not take it at all, and the reason was that he only looked at the cases casually, except at the *post-mortem* examinations, because he had not the remotest intention of publishing anything. He took rough notes of what he saw when he examined the cows, and from the symptoms he concluded there must be something of a toxic nature to have such a sudden effect. One fact that had been mentioned with regard to subsequent paralysis was another point that was in favour of that theory. Why should there be subsequent paralysis of anything unless it was subsequent apoplexy? But there was no clot in the brain structure to be found in any one of the cows. As it was only gross lesions of the brain, he imagined, that could constitute real apoplexy, he thought the term puerperal apoplexy certainly did not fit the cases. He could not add anything further to the cases he had recorded. He had not seen any since the cases stopped. He looked upon the outbreak as an epidemic that came suddenly and it ceased, although a cow was calving almost daily. (Applause.)

Replying to a question by a member as to whether the veterinary surgeon who attended these cows gave any instructions as to an alteration of their treatment and diet, Dr. Thomas said they were all strictly under the veterinary surgeon's control, and there had been dietetic treatment. The chief authorities of the institution

had given strict orders that the cows should be kept on low diet for a fortnight beforehand; and they had what the veterinary surgeon sent in to the cowman—a cleansing drink, he termed it—a drink to be given before calving, and all these cows had one. One cow that had this particular affection a year ago he noticed specially, because the cowman was very particular to give this drink to this case, and he (Dr. Thomas) was watching the effect. But it did not seem to have any effect at all, as the cow died.

Dr. Wild said he had listened with the greatest pleasure to the discussion. He was pleased to be amongst them, because he felt keenly, as a pathologist, that they needed the aid of veterinary surgeons on many important points in human pathology on account of the greater opportunities of *post-mortem* examination that were open to them, and the means they had of conducting experiments on the lower animals which they had not in the branch of the profession to which he belonged. From Mr. Wolstenholme's paper, and the remarks of various speakers, it seemed clear that the terms "milk fever" and "parturient apoplexy" included more than one class of cases. First, there were those accompanied by a rise in temperature, almost certainly of septic origin and corresponding to puerperal fever in the human female, and also found after parturition in all domestic animals. Secondly, there was a group of cases to which alone the term "parturient apoplexy" was strictly applicable, occurring only in cows; characterised by a fall in temperature, coma of more or less sudden onset, anæsthesia, and sometimes local paralysis; the symptoms either terminating in early death, or gradually passing off. The interesting fact that these cases only occurred in cows, and rarely before the third calf, led them to inquire in what respect a cow at that period differed from other domestic animals. The most striking difference undoubtedly was the enormous increase of the milk-producing capacity of the cow—a capacity which was increased in every way by selective breeding and artificial feeding until the amount of milk produced was out of all proportion to the amount produced by other domestic animals. It was also a significant fact that the cows which produced the most milk were also those which were most frequently attacked by parturient apoplexy. Could they find any explanation of the pathology of the disease in this increased capacity for the production of milk—that is an albuminous fluid containing large numbers of fat-globules? To turn for a moment to human pathology; they found that in some cases of diabetes the blood contained fat-globules. Many cases of diabetes terminated by coma, resembling in its sudden onset and other characters the parturient apoplexy of the cow. In some of these cases fat-emboli had been found blocking up the small vessels of the medulla and other parts of the brain. Was it not possible that a similar condition of fat-embolism might be the cause of parturient apoplexy? The excessive production of fat-globules in the milk would afford a source from which fat-globules might, under certain conditions, pass into the blood, and

being carried by the circulation into the brain might block up the small arteries or capillaries, and so produce coma. If the fat-globules were re-absorbed recovery would take place, thus affording an explanation of those cases of recovery which were difficult to account for on any theory of the disease assuming serious organic changes of the tissues. He did not claim any value for this theory, but simply suggested its possibility as a guide for future researches. (Applause.)

Mr. ——— said he was the "A. B." that gave rise to the correspondence on this subject. He had heard it said that a heifer did not have what was commonly called milk fever. He met a gentleman last year at Lord Egerton's sale in Cheshire who said his cows had suffered a lot from milk fever, and that a heifer of three and a half years' growth had been seized with it and had died. Three cows that he (the speaker) lost last September were all treated scantily to food, were all assisted by himself to calve, and each of them was seized with parturient apoplexy and died. One cow calved in the open field, and that one went on all right and lived. He had calved six cows this month, and on the strength of Dr. Cullingworth's advice to him with regard to their treatment he had felt the greatest assurance. He had fed them in the ordinary way, taking no notice of the quantity, but seeing that they were healthy and that their bowels were right. In every case they had done well. He had a cow that had calved that morning—a cow nine years old—which gave a dozen quarts of milk a day.

Mr. Hopkin.—This meeting marks a red letter day in the history of our Association when the two branches of the medical profession are invited to discuss the pathology of parturient apoplexy, but there are subjects of far greater importance—tuberculosis, rabies, scarlatina, &c.—which should be thrashed out in this way. In regard to the views advanced by Professor Penberthy as to the part fat and fat-producing plays in the etiology and pathology of parturient apoplexy, old practitioners will bear me out in stating that this disease does occur in poor cows, and in such cases the animal is almost sure to die. The longer the period elapsing after the act of parturition before development of the disease the greater the chance of recovery. Many cases recover from the brain symptoms, regain consciousness, but paralysis of the hind extremities continues; and although the animal may be eating, drinking, and apparently in good health, it has to be destroyed on account of the paralysis. Milk fever is confined to districts depending in great measure upon the treatment to which cattle are subject; rarely met with in the cheese-producing districts, much oftener in dairy and butter districts. With proper diet and exercise it is a preventable disease. These facts are not consistent with septic origin. In one dairy I know dangerous cows are bled before calving, and it is regarded as a certain preventive.

The *President* said he had been requested to ask if anyone had seen a case of milk fever before parturition.

Professor Edgar, in reply, said that in a very extensive experience

of the disease he had seen one case in primipara, occurring after the third day, and three or four cases before parturition. He had seen one calf delivered while the cow was insensible, and it never recovered.

Mr. Kidd said he had had very large experience of this disease, and he had never once seen or heard a cure where parturient apoplexy had attacked the cow within twelve hours after calving. After twenty-four hours there was a chance of recovery, after thirty-six hours there was a good chance, and after forty-eight hours there was nearly a surety of getting better. Parturient septicæmia, which he considered analogous to parturient fever in the human female, was, he believed, due to blood-poisoning, and was infectious. Parturient apoplexy, in his opinion, was not due to that, the *post-mortem* appearances being almost negative, *i. e.* the uterus presented no abnormal appearance. The only appearance was in the brain, and what that was due to he was not prepared to say.

Professor Penberthy said this fatty degeneration theory was one theory of his to account for the whole of the conditions that occurred here, but what he had heard that night went further to prove it than any opinion he had had before. He had been with parturient animals all his life, having had nearly a thousand of his own, and had seen large numbers of cases of parturient apoplexy; and Mr. Hopkin had added to his (the speaker's) information materially by giving his experience of paralysis. He had frequently seen paralysis, but not so commonly as Mr. Hopkin had done. This all pointed to some organic disturbance in the brain. He had made many sections of the brain and stained them, and in these cases the darkening of the sections had been much more marked than in ordinary brains.

Dr. Cullingworth said it would be helpful in elucidating the etiology of this affection if sound investigations could be made of the blood of animals dying from parturient apoplexy, specially from the bacterialitic point of view. In that way one might get positive or negative evidence, and so possibly set the matter at rest. He had the authority of Dr. Wild (who was assistant pathological lecturer at Owens College) to say that he would assist anyone in such an investigation if they would send him a small quantity of blood (from any case that might come under their observation) carefully packed between two glass slides. He would make microscopic investigations of the blood and try and ascertain whether there was any information to be got in that way.

Mr. Wolstenholme said that Dr. Wild would also be pleased to examine the medulla for fat-emboli. He had very little to add to what he had said in his paper. He would like to ask Dr. Cullingworth a question. Did he consider puerperal eclampsia in the human female due to septic poisoning?

Dr. Cullingworth.—No.

Mr. Wolstenholme.—To a chemical poison?

Dr. Cullingworth.—Yes.

Mr. Wolstenholme said he was perfectly satisfied, indeed it was

admitted that there was no analogy between the two diseases. The absence of the disease in primipara precluded the idea that it was due to septic poison. It was possible they might have a poison something analogous to that which in human females produced coma, convulsions and death in diabetes, and several other things, such as the organic poisons which were formed in certain states of the body, subtle alkaloid poisons.

Votes of thanks were afterwards passed to Mr. Wolstenholme for his paper, and to Dr. Cullingworth and the other visitors for the interest they had taken in the discussion.

Dr. Cullingworth, in acknowledging the vote, said he quite agreed with those speakers who had alluded to the great desirability of both branches of medical practitioners meeting more frequently. He did think that great benefit might arise from so doing in the elucidation of many other pathological problems besides the ticklish one they had been discussing. (Applause.)

A vote of thanks to the President closed the proceedings.

NEW MEMBERS OF THE PROFESSION.

At a meeting of the Court of Examiners of the Royal College of Veterinary Surgeons, held in London on and between May 14th and 17th, 1889, the following, from the Royal Veterinary College, passed their Oral and Practical Examinations, and were admitted members of the profession:

Mr. W. Rattee.
— C. F. Hulford.
— C. E. Williamson.
— J. McJamieson.
— W. A. Byrne.
— W. Cakebread.
— J. H. Bell.
— H. Watkins-Pitchford.
— B. J. Rees.
— F. B. Vanderplank.
— G. L. Harber.
— I. Millward.
— A. Le Sueur.
— E. W. Oliver.
— C. J. Callow.
* — E. E. Martin.
— H. D. Chorlton.
— J. Wilson-Barker.
— G. T. Cannon.
— S. Vincent.

Mr. C. A. Malvisi.
— R. H. Singleton.
— A. Porritt.
— E. P. Owen.
— J. Codrington.
— F. C. Gavin.
† — J. Golledge.
— T. Ludlow.
— E. D. Johnson.
— H. H. Milward.
— Thos. Slipper.
* — J. W. Coe.
— A. G. Seath.
— A. Bramall.
— I. Wilson.
— F. W. Emery.
— J. Beauland.
— W. A. Welch.
— G. H. Williams.

* Marked thus, passed with *Great Credit*.
† Marked thus, passed with *Very Great Credit*.

The following passed their *Second Examination :*

Mr. W. R. Kennedy.
— C. M. Robinson.
— W. E. Brame.
— F. H. Jenkins.
— E. E. Stokes.
— W. K. Stuart.
* — F. W. Greenlaw.
* — H. J. R. Pope.
— F. Gale.
* — W. N. Wright.
* — R. W. Davies.
* — H. B. Knight.
— A. W. Reid.
* — L. C. Welfare.
— T. J. Carless.
— E. H. Simmons.
* — F. L. Somerset.
† — J. Row.
† — J. C. Garry.
— A. Wall.
— A. Smith.
— F. Gregory.

Mr. W. H. Williamson.
— E. Morgan.
— C. H. Cordy.
* — P. C. Woolston.
— A. H. Jones.
* — C. B. Harris.
— F. H. Potts.
* — E. J. Fowler.
— H. S. Smith.
*Capt. G. H. Farrell.
Mr. J. B. Tutt.
— F. S. H. Baldry.
* — M. A. Hutchence.
† — F. M. Hill.
— G. F. Bushman.
† — F. H. R. Bumbury.
* — T. F. Spencer.
* — F. E. Place.
— D. G. Davies.
— C. Harwood.
* — W. F. Howes.
— D. Pugh.

The following passed their *First Examination :*

Mr. T. McCaffrey.
— C. W. Brown.
* — G. C. Lowe.
— G. M. Pomery.
— W. Collinson.
— H. A. Sullivan.
— A. H. Lane.
— A. G. Tegg.
— W. H. James.
* — A. P. Case.
— S. F. H. Thorn.
† — F. S. Sikes.
— W. B. Edward.
— J. H. Lockwood.
* — T. Kemp.
† — V. D. O. Brown-Morrison.

Mr. A. G. Hillier.
— P. J. Welch.
— H. F. West.
— W. Miles.
* — W. P. Horsley.
— C. S. Ware.
* — W. N. Dobbing.
* — J. Maguire.
— T. J. Arman.
— J. W. Wadsworth.
† — T. A. Ford.
— D. P. Davies.
— W. W. Grasby.
† — J. W. Reynolds.
— A. M. Ward.
— J. Toms.

* Marked thus, passed with *Great Credit.*
† Marked thus, passed with *Very Great Credit.*

Mr. H. S. Sawyer.
* — J. H. Taylor.
— G. T. Norman.
— M. T. Sadler.
— A. E. Clarke.
— F. T. G. Hobday.
— A. E. Bayley.
— A. I. Cattell.
— A. Crofts.
— C. C. Abrams.
— J. E. Wallis.
* — G. H. Williams.
* — C. R. Edmonds.

*Mr. J. H. Shepherd.
— J. H. Manton.
— G. J. Harvey.
— M. Fortescue.
— J. D. Martin.
— A. England.
* — W. T. Cade.
— F. W. Wilson.
— H. Sessions.
— F. B. Eve.
— E. R. James.
— A. B. R. Battye.
† — W. R. Mills.

ARTHUR W. HILL, *Secretary.*

AT meetings of the Court of Examiners held in Glasgow and Edinburgh on and between May 21st and 30th, 1889, the following gentlemen passed their *Final Examination* and were admitted members of the Royal College of Veterinary Surgeons:

GLASGOW VETERINARY COLLEGE.

Mr. H. Rees . . .	Invergordon, Ross-shire.
— J. W. Peatt . .	Rockary, Monaghan.
— W. Smith . . .	Katesbridge, Co. Down.
— H. J. Windsor . .	Govan, Glasgow.
— C. B. Freeman . .	Dublin.
— D. C. McCambridge .	Randaltown, Co. Antrim.
— J. Gregg . . .	Dromara, Co. Down.
— J. R. O. Reali . .	Cashel.
— M. Wilson . .	Mendota, Ill., U.S.A.
— D. Warnock . .	Glasgow.
— J. Graham . .	Londonderry.
— R. Anderson . .	Glasgow.
— R. K. Hart . .	Glasgow.

DICK VETERINARY COLLEGE.

Mr. H. G. Rogers . .	Leicester.
— F. Barling. . .	Ross, Herefordshire.
— F. J. S. Clark . .	Gosport, Hants.
— O. Connacher . .	Perth.
— J. Christy . . .	Limerick.
— A. Dowdall . .	Liverpool.
— F. J. Finney . .	Newcastle-on-Tyne.
— R. W. Glaister . .	Cockermouth.
— J. R. Jones . .	Hacketstown, Carlow.
— C. B. Langran . .	Cork.
— J. Lyons . . .	Mallow.

* Marked thus, passed with *Great Credit.*
† Marked thus, passed with *Very Great Credit.*

Mr. J. Manuel . .	Edinburgh.
— J. C. McAleer . .	Stewartstown, Tyrone.
— A. E. Mettam . .	Retford, Notts.
— A. Richardson . .	Oxford.
— J. G. Gilmour . .	Bailieborough, Co. Down.
— J. C. Rowlands . .	Oswestry.
— A. S. Wallace . .	Arbroath.
— C. D. Watkins . .	Tredegar, Monmouth.

NEW VETERINARY COLLEGE.

Mr. J. Caldecott . .	Knutsford, Cheshire.
— J. W. Schofield . .	Manchester.
— A. Reah . . .	Preston.
— W. Wright . .	Kelso.
— O. T. Williams . .	Holyhead.
— E. Killett . . .	Rathin, Wales.
— E. H. Curbishley .	Stockport.
— A. D. Minor . .	Manchester.
— R. D. Davidson . .	Walton, Caithness.
— F. Hutchison . .	Howden, York.
— W. Eaton . . .	Melton Mowbray.
— J. W. Rider . .	Richmond, York.
— W. A. McDougal .	Jedburgh.
— W. F. Shore . .	St. Boswells.
— W. Stothert . .	Manchester.
— T. M. Parker . .	Wigan.
— F. Dales . . .	Howden, Yorkshire.
— J. Barker . . .	Bromley, Lancashire.
— T. G. Duggle . .	Liverpool.
— J. B. Robertson .	Bradford.
— F. Booth . . .	Abergele, Wales.

The following passed their *Second Examination:*

GLASGOW VETERINARY COLLEGE.

*Mr. P. Gillespie.	*Mr. C. Squair.
* — T. Jarvie.	* — W. Davidson.
— D. Clerk.	† — W. Logan.
— J. Watson.	† — A. Renfrew.
* — J. Bishop.	* — P. J. Austin.
* — W. Ledger.	† — J. Kirk.
* — A. Millar.	* — J. K. Bruce.
* — R. Weir.	* — T. Trotter.
* — W. McMurrick.	* — G. Waddell.
— A. Hill.	† — J. Thompson.
— P. Connoly.	— W. Erskine.
— J. R. Thompson.	— T. Dunn.
* — L. Crook.	

* Marked thus, passed with *Great Credit.*
† Marked thus, passed with *Very Great Credit.*

Dick Veterinary College.

Mr. W. J. McCartan.
— J. Boase.
— R. St. John Walley.
— A. C. Gray.
— C. Carrick.
* — J. Crone.
* — W. Weston.
— W. Williams.
— R. G. Robertson.
Mr. E. Bowman.
— D. Woods.
— J. Higginson.
* — D. Straughan.
— G. F. Ferguson.
— H. Kenny.
* — A. Breakwell.
* — A. Paterson.
— E. Goodman.

New Veterinary College.

Mr. J. Hume.
— J. M. Maxwell.
* — A. McGregor.
— E. Neilson.
* — E. Murray.
— E. Fern.
* — J. Brand.
* — J. H. Parker.
* — W. S. Lamont.
— A. Prestwick.
— R. Bell.
— J. Cockburn.
— H. H. Baker.

The following have passed their *First Examination :*

Glasgow Veterinary College.

Mr. W. Packman.
— R. Ward.
— R. Campbell.
— W. Marshall.
— J. Neill.
* — W. Galloway.
* — J. Forrest.
†Mr. J. E. Johnstone.
— J. Jordan.
— S. C. Pottie.
† — J. D. Walker.
† — J. Gilruth.
* — J. Douglas.

Dick Veterinary College.

Mr. V. Banks.
— J. W. Hudson.
— J. J. Griffiths.
* — P. J. Mullane.
— H. Eve.
— J. A. Moore.
* — J. C. Paton.
— W. Hamilton.
* — W. Stewart.
* — J. Dawson.
* — J. Tavish.
— E. W. Thorburn.
— J. Carmichael.
† — Alex. Pottie.
— J. Maughan.
— W. J. Richardson.
Mr. R. Holmes.
* — W. Pye.
— J. Jarvie.
* — W. Sturdy.
— R. Hyde.
— J. Langran.
* — T. R. Hoggan.
— J. Kerr.
— J. Brown.
— M. Pottie.
* — J. Pringle.
— G. A. Thompson.
* — J. Henderson.
— D. S. Davidson.
— A. Bromfield.
* C. Baxter.

* Marked thus, passed with *Great Credit.*
† Marked thus, passed with *Very Great Credit.*

NEW VETERINARY COLLEGE.

Mr. F. Argyle.
— D. J. Elias.
— A. Ellison.
* — C. Haywood.
— J. Carpenter.
— J. M. Young.
— J. Connachie.
Mr. R. M. Pender.
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Secretary, Court of Examiners.

GLASGOW VETERINARY COLLEGE.

THE winter session of this Institution terminated on May 17th, and on the 21st, 22nd, and 29th the Oral Examinations of the Royal College of Veterinary Surgeons were conducted within the Museum of the College. The candidates for diploma were also subjected to a rigid practical examination on horses, cattle, and sheep, selected and brought to the College for that purpose. The Board of Examiners included :

Sir Henry Simpson, J.P., F.R.C.V.S., Windsor; Mr. George Fleming, C.B., LL.D., F.R.C.V.S., London; Mr. J. Roalfe Cox, F.R.C.V.S., London; Mr. Pritchard, M.R.C.V.S., London; Mr. Duguid, F.R.C.V.S., London; Mr. J. Vaughan, F.R.C.V.S., London; Mr. George A. Banham, F.R.C.V.S., Cambridge; Mr. B. Cartledge, F.R.C.V.S., Sheffield; Mr. J. Freeman, F.R.C.V.S., Dublin; Professor Hamilton, F.R.C.S.E., F.R.S.E., Aberdeen; Professor Yeo, F.R.C.S., London; Professor M'Kendrick, LL.D., F.R.S., Glasgow; Professor Almond, Cirencester College; Mr. W. B. Walters, F.R.C.V.S., Aldershot; Mr. T. H. Simcocks, F.R.C.V.S., Drogheda; Mr. Thomas Campbell, F.R.C.V.S., Kirkcudbright; Mr. Finlay Dunn, F.R.C.V.S., Edinburgh; Professor Heaton, F.C.S., F.I.C., London; Mr. H. Olver, F.R.C.V.S., Tamworth; Mr. Wm. Woods, sen., F.R.C.V.S., Wigan; and Mr. Richard Rutherford, F.R.C.V.S., Edinburgh. The following gentlemen were also present as *ex-officio* members :—Principal McCall, F.R.C.V.S.; Professor Cooke, F.C.S.; and Professor Limont, M.A., M.B.; Messrs. John Ferguson, M.R.C.V.S.; Matthew Graham, M.R.C.V.S.; and W. S. Johnson, Secretary.

Eighteen gentlemen presented themselves for the first or theoretical part of the Final Examination, and of this number fourteen were successful. Fifteen gentlemen presented themselves for the second or practical part of the Final Examination, and of these the following succeeded in obtaining the diploma of the Royal College of Veterinary Surgeons, viz. :

Messrs. Hugh Ross, Invergordon, Ross-shire; J. W. Peatt, Rock-

* Marked thus, passed with *Great Credit*.

corry, Co. Monaghan ; W. Smyth, Katesbridge, Co. Down ; H. J. Windsor, Govan ; C. B. Freeman, Clontarf, Co. Dublin ; D. M'Cambridge, Randalstown, Co. Antrim ; James Gregg, Dromara, Co. Down ; J. R. O. Reali, Cashel, Co. Tipperary ; Matthew Wilson, Mendota, Illinois, U.S.A. ; David Warnock, Glasgow ; Joseph M. Graham, Londonderry ; Robert Anderson, Langbank, Renfrewshire ; and Andrew K. Hart, Glasgow.

Twenty-eight students presented themselves for the "B" or Second Professional Examination, and of this number twenty-five passed, four of them with "very great credit" and fourteen with "great credit," viz. :

†William Logan, Ayr ; †Archibald Renfrew, Hurlet, Renfrewshire ; †Joseph Kirk, Dumfries ; †Joseph Thompson, Ballynahinch, Co. Down ; *Peter Gillespie, Strathbungo, Glasgow ; *Thomas Jarvie, Wishaw ; *James Bishop, Glasgow ; *William Ledger, Lisnaskea, Co. Fermanagh ; *A. Millar, Lochwinnoch, Renfrewshire ; *Robert Weir, Lanark ; *William M'Murrich, Helensburgh ; *Llewellyn Crook, Manchester ; *C. A. Squair, Kildrummie, Nairnshire ; *W. Davidson, Glasgow ; *P. J. Austin, Lurgan, Co. Armagh ; *J. K. Bruce, Alyth, Perthshire ; *T. Trotter, Maybole, Ayrshire ; *George Waddell, Glasgow ; Dugald Clerk, Kilmartin, Argyllshire ; John Watson, Shettleston, Lanarkshire ; Alexander Hill, Ballynahinch, Co. Down ; Peter Connolly, Warrenpoint, Co. Down ; J. K. Thompson, Londonderry ; William Erskine, Bridge of Weir, Renfrewshire ; and Thomas Dunn, Hazel Grove, Cheshire.

The following students passed the "A" or First Professional Examination, viz. :

Walter Packman, Bury, Lancashire ; Robert Ward, Southport, Lancashire ; Randolph Campbell, Kirkcudbright ; William Marshall, Drummore, Wigtownshire ; J. W. Neill, Partick ; *William Galloway, Dumbarton ; *James Forrest, Glasgow ; †J. E. Johnston, Dungannon, Co. Tyrone ; J. A. Jordan, Belfast ; Stuart C. Pottie, Sydney, New South Wales ; †J. D. Walker, Bandon, Cork ; †J. A. Gilruth, Arbroath, Forfarshire ; and *James Douglas, Kirn, Argyllshire.

Medals granted by the Highland and Agricultural Society of Scotland ; the late Professor Allan Thomson, of London ; Mr. Thomas Campbell, F.R.C.V.S., Kirkcudbright ; and Principal McCall ; and certificates of merit by the College were awarded in the different branches of study as follows :

Horse Pathology (Written Examination).—(Silver Medal, H. & A. S. of S.) Mr. James Gregg. (First-class Certificates) Messrs. David Warnock, J. W. Peatt, and J. M. Graham ; (Second-class Certificates) M. Wilson, J. M. M'Dougall, and W. M. Hutchinson.

Cattle Pathology (Written Examination).—(Silver Medal, H. & A. S. of S.) Mr. David Warnock. (First-class Certificates) Messrs. Gregg, Graham, and Peatt ; (Second-class Certificates) Messrs. Wilson and J. R. O'Reali.

Morbid Anatomy (Written Examination).—(First-class Certifi-

* Marked thus, passed with *Great Credit.*

† Marked thus, passed with *Very Great Credit.*

cates) Messrs. Warnock, Gregg, and Hutchinson; (Second-class Certificates) Messrs. M'Dougall, Wilson, and Peatt.

Practical Examination of Horses as to Age, Soundness, Operations, &c.—(Gold Medal, Principal McCall) Mr. M. Wilson.

Practical Examination of Cattle and Sheep as to Soundness, Age, Operations, &c.—(Gold Medal, Mr. Campbell) Mr. David Warnock.

Anatomy, Special and Comparative.—(Medallist) Mr. J. K. Bruce. (First-class Certificates) Messrs. W. Davidson, A. Renfrew, and T. A. Trotter; (Second-class Certificates) Messrs. W. Logan, G. Waddell, and J. Kirk.

Physiology (Written Examination).—(Medallist) Mr. T. A. Trotter. (First-class Certificates) Messrs. J. K. Bruce, W. Davidson, A. Renfrew, and G. Waddell; (Second-class Certificates) Messrs. J. Thompson, A. Millar, and C. A. Squair.

Best Professional Examination in Anatomy.—(Gold Medal, the late Professor Allan Thomson) Mr. T. A. Trotter.

Junior Anatomy.—(Medallist) Mr. J. A. Gilruth. (First-class Certificates) Messrs. J. Forrest, S. C. Pottie, W. Marshall, and J. A. Jordan; (Second-class Certificates) Messrs. R. Mason, J. D. Walker, and H. Hazeel.

Chemistry.—(Medallist) Mr. J. Forrest. (First-class Certificates) Messrs. J. A. Gilruth, J. D. Walker, J. E. Johnston, W. Marshall, and W. Galloway; (Second-class Certificates) Messrs. J. Douglas, R. Mason, and S. C. Pottie.

Botany.—(Medallist) Mr. J. A. Gilruth. (First-class Certificates) Messrs. J. D. Walker, J. E. Johnston, J. Forrest, and J. Douglas; (Second-class Certificates) Messrs. J. W. Neill and W. Galloway.

Principal McCall's Bursary of £20, or a Gold Medal the value of that amount, for the student who obtained the highest aggregate marks in his First and Second Professional Examinations before the Board of Examiners, was divided between Messrs. J. K. Bruce and W. Logan, their marks being equal.

NEW VETERINARY COLLEGE, EDINBURGH.

At the examinations just held by the Royal College of Veterinary Surgeons, the following students from the above College passed their Final Examination and were admitted members of the College:—Messrs. John Caldecott, Knutsford; J. W. Schofield, Failsworth, Lancashire; A. Reah, Preston; W. Wright, Kelso; O. T. Williams, Anglesea; E. Kellet, Ruthin; E. H. Curbishley, Stockport; A. D. Minor, Manchester; R. D. Davidson, Cogle, Caithness; F. Hutchinson, Howden, Yorkshire; W. Eaton, Melton Mowbray; J. W. Rider, Richmond, Yorkshire; W. M'Dougall, Jedburgh; W. Shore, St. Boswells; W. Stothert, Manchester; T. M. Parker, Wigan; F. Dales, Howden, Yorkshire; J. Barker, Burnley, Lancashire; T. G. Duggle, Liverpool; *J. B. Robertson, Bradford; *F. Booth, Abergele, North Wales.

* Marked thus * passed the first portion of the examination with *Great Credit*.

The following passed the first portion of this examination:—Messrs. R. W. Donaldson, T. W. Baroclough, G. H. Scoon, E. H. Schofield, E. F. de Jong.

The following passed the Second Professional Examination:—Messrs. J. Hume, J. M. Maxwell, *A. McGregor, E. Nelson, *E. Murray, E. Fern, *J. Brand, *J. H. Parker, *W. Lamont, A. Prestwiche, R. Bell, J. Cockburn, H. H. Baker. Messrs. Argyle, Elias, Ellison, *Haywood, Carpenter, Young, Connochie, Pinder, Farmer, Fitzgibbon, *Eaglesham, Siddle, *Johnstone, and Todd passed the First Professional Examination.

Prize List.

The distribution of Prizes to the successful students took place on May 21st; Professor Williams, Principal of the College, presiding.

The Principal's £20 Prize.—(Gold Medal) T. G. Duggle.

Pathology of the Horse.—(Medal) F. Booth. (Certificates) 1st Class, W. Stothert, J. Robertson; 2nd Class, T. M. Parker, E. F. de Jong, R. W. Davidson.

Pathology of the other Domesticated Animals.—(Medal) J. Robertson. (Certificates) 1st Class, E. F. de Jong, T. G. Duggle; 2nd Class, W. Stothert, T. M. Parker, J. P. Isherwood, F. Booth.

Anatomy (Senior).—(Medal) J. H. Parker. (Certificates) J. Brand, W. S. Lamont, J. Cockburn, L. Browne.

Physiology.—(Medal) J. H. Parker. (Certificates) W. S. Lamont, R. J. Bushnell, J. Cockburn, E. Fern.

Histology.—(Medal) R. J. Bushnell. (Certificates) J. H. Parker, E. Fern, J. Brand, W. S. Lamont, A. Macgregor.

Chemistry.—(Medals) Todd and Johnstone.

Practical Chemistry.—(Medals) E. Haywood and A. G. Todd.

Elementary Anatomy.—(Medal) R. E. Johnstone. (Certificates) R. Eaglesham, C. Haywood.

Botany.—(Medal) J. Connochie. (Certificates) C. Haywood, R. E. Johnstone, J. Farmer, J. H. Siddle.

Curators of Museum.—(Medals) E. F. de Jong, E. Franklin.

For Practice.—(Medals) W. Stothert, E. K. Burton.

Demonstrator of Pathology.—(Medal) J. Robertson.

Agricultural—Veterinary Hygiene—Principal's Class.—(Medal) J. J. Jeffrey; Professor W. O. Williams's Class (Medal), D. J. Gilchrist.

* Marked thus * passed with *Great Credit.*

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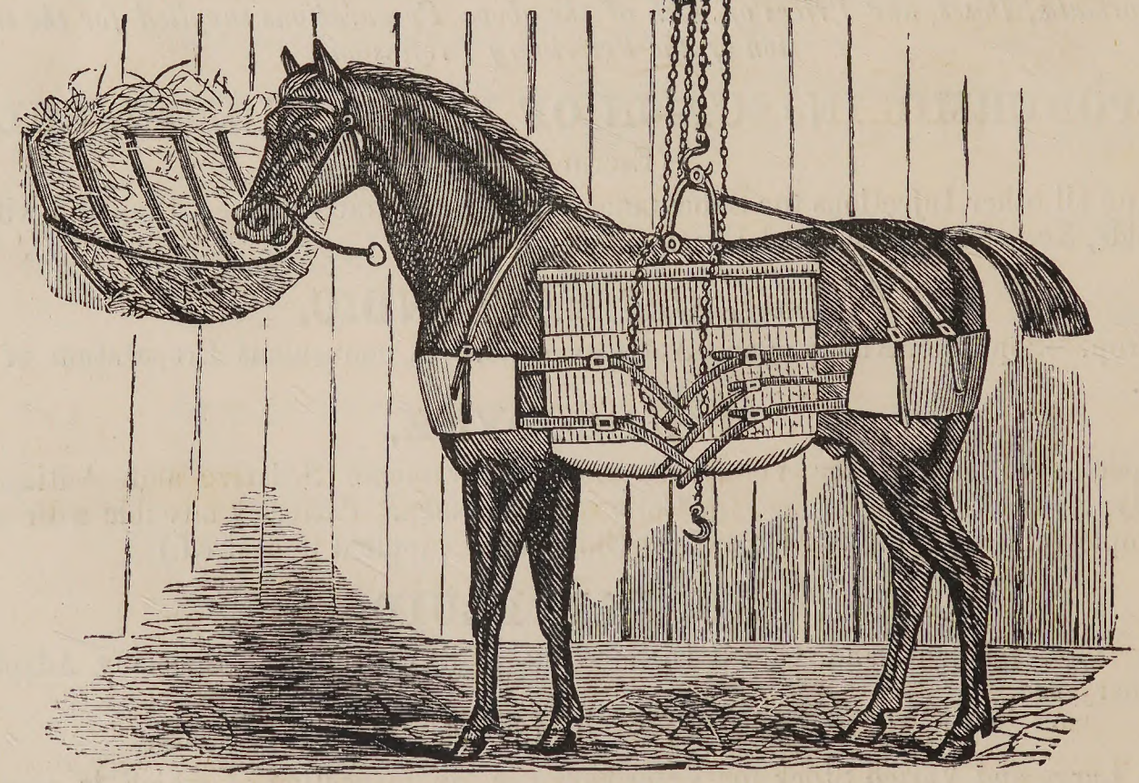

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TREASURER.—G. Dunbar Whatman, Esq.

PRINCIPAL.—Professor G. T. Brown, C.B.

A Subscription of *twenty guineas* entitles the Subscriber to all the privileges of the Institution, as a general Veterinary Establishment and Hospital for Animals, for life; and an annual payment of *two guineas*, to the same privileges during the continuance of such Subscription.

A Subscriber is entitled to have admitted into the Hospital for medical and surgical treatment, an unlimited number of Horses or other animals, his own property, at a charge only for their keep. Also, without the payment of fees, to have the opinion of the Professors as to the treatment of any animal he may wish to retain in his own establishment.

A Subscriber has likewise the privilege of having five horses examined *as to soundness* in the course of a year, and to receive the opinion of the Professors thereon, either verbally or in writing, free of charge; and also any further number at a fee of ten shillings and sixpence for each *extra* horse, or to have ten horses examined on payment, in addition to his Annual Subscription, of two guineas, or such other sum as shall from time to time be fixed by the Governing Body or General Purposes Committee.

The Professors do not examine horses for soundness out of the Institution, nor do they visit patients, except on very special occasions, and then only with the object of their being removed into the Hospital for treatment.

Members of the Royal Agricultural Society of England are entitled to all the privileges of the Institution, as appertaining to the diseases of Cattle, Sheep, and Swine.

The Hospital and general Practice of the College is conducted by Professors Axe and Penberthy.

The Hospital contains ample accommodation for upwards of 100 Horses, besides Cattle, Sheep, Dogs, and other animals. It is fitted up with large and airy Loose-boxes and Stalls; Hot, Cold, Douche, and Vapour Baths; Operating Rooms, Covered Exercising Ground, &c. Rooms are specially set apart as an Infirmary for Dogs.

ROYAL VETERINARY COLLEGE.

By the Royal Charter of Incorporation the GOVERNORS have power "to confer upon and grant to such of the Students of the said College as they shall think fit, *Annual or other Exhibitions, Scholarships, Medals and other Prizes and Certificates of Distinction.*"

A SCHOLARSHIP of £25 per annum, tenable for two years, was awarded for the year ending June 30th, 1888; and an additional Scholarship of the same amount will be awarded in 1889. Beside the COLEMAN PRIZE MEDALS; CLASS MEDALS, PRIZES AND CERTIFICATES are given in each division of the Students' studies.

In addition to these Prizes the Royal Agricultural Society awards a *Silver* and a *Bronze Medal* to the two Students who may pass the best examination in the Pathology of Cattle, Sheep, and Pigs, at the Diploma Examination of the Royal College of Veterinary Surgeons.

The College Entrance Fee is 45 *Guineas;* the payment of which confers the right of attendance on *all* the Lectures and Collegiate Instructions. The fee may be paid in *three* instalments, viz., Twenty-five guineas on *entry*, Ten guineas at the end of the *first period* of study, and Ten guineas at the *second period* of study—the first instalment must, with the Matriculation Examination Fee of One guinea, as well as the Library and Reading Room Fee of One guinea, be paid prior to this Examination.

A Pupil, previously to his admission, is required to produce a recognised Certificate of Educational Acquirements, which must include all the pass subjects of the Matriculation Examination, or otherwise he must pass an Examination in *Writing, Reading aloud, Dictation, English Grammar, English History, Geography, Arithmetic, and French, German, or Latin.* A Pupil may also elect to be examined in any of the following subjects, *not exceeding two:*—Euclid, Books one and two; Algebra to Quadratic Equations inclusive; Natural History (Botany, Geology, or Zoology); Physiology; Chemistry; Physics; and the Greek, German, or Italian Languages.

The Educational Year is divided into a Summer and Winter Session of three terms, and begins on Oct. 1st and ends the middle of May.

Lectures, Clinical and Pathological, Demonstrations, and General Instruction, are given on Diseases of the Horse and other Domesticated Animals, including Epizöotics, Parasites and Parasitic Affections; also on Anatomy, Physiology, Histology, Chemistry (General and Practical), Materia Medica, Toxicology, Botany, Therapeutics and Pharmacy; Hospital Practice; Obstetrics; Operative Surgery, The Principles and Practice of Shoeing, &c.

Besides these Lectures and Demonstrations, the facilities which exist in the Institution are such as to enable Pupils, by attention to their duties, to acquire a well-grounded practical knowledge of their profession, and thus, on obtaining their Diploma, to at once merit the confidence of the public. This will become fully apparent when it is remembered that, for several past years, upwards of 2000 animals have been annually prescribed for and treated as GRATUITOUS PATIENTS *by the Pupils under the Supervision of the Teachers.*

In addition to the practical knowledge thus to be obtained, the pupils have the daily advantage of attending the Professors on their visits to the Patients in the Hospital, thereby becoming acquainted with the diagnosis and treatment of each individual case. Similar advantages are likewise enjoyed by them with reference to the Out-Patients. They also attend on the Professors in their Examinations of Horses for Soundness, the yearly average number of which exceeds 1000. It may be further added, as showing the advantage of the College for obtaining practical knowledge, that the number of animals admitted into the Hospital or treated as Out-Patients year by year exceeds 2000 or more than doubles those sent for examination as to soundness.

A Student, during his Academical Course, has to undergo *three* examinations by the Royal College of Veterinary Surgeons. To be eligible for the FIRST he is required to attend, *at least*, one Winter and one Summer Session; a second Winter and Summer Session before being eligible for the SECOND Examination, and a third Winter and Summer Session before being examined for the Diploma of the College.

The Examinations are held in May and December.

Educational Staff.

G. T. BROWN, C.B., Professor, Principal of the College and Lecturer on Contagious and Parasitic Diseases.
J. W. AXE, M.R.C.V.S., Professor of the Principles and Practice of Veterinary Medicine.
H. POWER, F.R.C.S., Professor of Physiology.
E. S. SHAVE, M.R.C.V.S., Professor of Anatomy.
J. PENBERTHY, F.R.C.V.S., Professor of Pathology and Therapeutics.
J. MACQUEEN, F.R.C.V.S., Professor of Botany and Histology.
J. BAYNE, Lecturer *pro tem.* on Chemistry, Materia Medica, and Toxicology.
A. C. WILD, M.R.C.V.S., Demonstrator.
A. JAMES, M.R.C.V.S., Hospital Surgeon.

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